BULLETIN OF THE UNIVERSITY OF SANTA CLARA

Vol. II. No. 4

University of Santa Clara

General Catalogue

1913-1914

SANTA CLARA, CALIFORNIA
JUNE, 1913

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ANNOUNCEMENT
1913-14

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Santa Clara, Cal.

UNIVERSITY OF SANTA CLARA

APPLICATION BLANK

Date..

Name in full ....

Day, year and place of birth ....

Present address ....

Name and address of parent or guardian ....

What college do you desire to enter ? ....

Can you fulfil the prescribed units ? ....

Schools formerly attended ....

State last grade .... Also whether promoted..........................

How long have you taken Latin ? .... How long Greek ? ....

What have you done in English ? ....

What in Elementary Science ? ....

What in Mathematics ? ....

....

The Corporate Title of the University is

THE PRESIDENT AND BOARD OF TRUSTEES OF SANTA CLARA COLLEGE

BOARD OF TRUSTEES

JAMES P. MORRISSEY, S. J.
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Re-opening of the University, Registration, Etc.

First Semester.

Tuesday, Sept. 2, 1913—Registration and classification of new non-resident students. Examination to remove conditions of old students.

Wednesday, Sept. 3—Registration and classification of new resident students. Examination to remove conditions of old students.

Thursday, Sept. 4—12:30 P. M.—All resident students must report to the Director of Discipline.
1:00 P. M.—All non-resident old students must register at the office of the Director of Studies.
1:45 P. M.—All resident old students must register at the office of the Director of Studies.
2:30 P. M.—Classes begin in all departments.

Second Semester.

Monday, Feb. 1, 1914, 8:50 A. M.—Registration and classification of new students.
10:00 A. M.—All non-resident old students must register at the office of the Director of Studies.
11:00 A. M.—All resident old students must register at the office of the Director of Studies.
1:30 P. M.—Classes begin in all departments.

Monday, Feb. 15—Last day for the removal of conditions.

N. B.—Students who fail to register at the time prescribed are charged one dollar for registration.

FACULTY OF THE UNIVERSITY

JAMES PETER MORRISSEY, J. S.,
President.

FRANCIS JOSEPH BURKE, S. J.,
Vice-President and Director of Discipline.

JOHN JOSEPH LAHERTY, S. J.,
Secretary and Treasurer.

CORNELIUS A. BUCKLEY, S. J.,
Dean of the Faculties.

WILLIAM MICHAEL BOLAND, S. J.,
Chaplain, Professor of Logic and Metaphysics.

HENRY EMIL BOESCH, S. J.,
Registrar, Instructor in French.

JEROME SIXTUS RICARD, S. J.,
Professor of Ethics and Mathematics; Director of Astronomical Observatory and of the Meteorological and Seismological Stations.

RICHARD H. BELL, S. J.,
Professor of Physics and Mathematics.

ANTHONY CICHI, S. J.,
Emeritus Professor of Chemistry.

JAMES J. CONLON, S. J.,
Professor of Chemistry and Biology.

FACULTY OF UNIVERSITY

RICHARD N. BRAINARD, S. J.,
Instructor in English and Latin.

EDMUND WALL, S. J.,
Assistant Director of Discipline, Instructor in English.

HENRY A. GABRIEL, S. J.,
Lecturer in Sociology.

JOHN HENRY McCUMMISKEY, S. J.,
Professor of English Language and Literature, and of Latin.

ALPHONSE JUNIPERO QUEVEDO, S. J.,
Professor of English and Mathematics.

JOSEPH ALOYSIUS VAUGHAN, S. J.,
Professor of Chemistry and Mathematics.

LAWRENCE EMMET O'KEEFFE, S. J.,
Professor of Law, Instructor in History.

EDMOND JOSEPH RYAN, S. J.,
Professor of English and Latin.

CHARLES E. O'BRIEN, S. J.,
Professor of Greek, Instructor in Mathematics.

S. ALOYSIUS ELINE, S. J.,
Assistant Director of Discipline, Instructor in Latin.

FACULTY OF UNIVERSITY

LOUIS B. EGAN, S. J.,
Instructor in English and Latin.

JOSEPH RANDALL CROWLEY, S. J.,
Instructor in Latin, English and History.

EUGENE J. IVANCOVICH, S. J.,
Instructor in Latin.

ERNEST P. WATSON, S. J.,
Instructor in English and History.

RAYMOND I. BUTLER, S. J.,
Instructor in English, Latin and Greek.

JAMES H. CAMPBELL, PH. D., J. D.,
Dean of the Institute of Law, Professor of Law.

CLARENCE CHARLES COOLIDGE, B. S., A. B., J. D.,
Professor of Law.

NICHOLAS BOWDEN, LL. B.,
Professor of Law.

JAMES PETER SEX, PH. D., J. D.,
Professor of Law.

JUDGE W. G. LORIGAN, LL. D.,
Associate Justice, Supreme Court of California.
Lecturer in Law.

FACULTY OF UNIVERSITY

CURTIS H. LINDLEY, LL. D.,
Lecturer in Law.

JUDGE J. V. COFFEY,
Lecturer in Law.

JUDGE B. V. SARGENT,
Lecturer in Law.

JUSTIN JEREMIAH GRIMES,
Intructor in Mathematics

JOSEPH L. DONOVAN, C. E.,
Professor of Civil Engineering.

GEORGE L. SULLIVAN, M. E.,
Professor of Mechanical Engineering.

ALBERT F. PORTA, C. E.,
Professor of Architecture.

CHARLES D. SOUTH, A. M., Litt. D.,
Instructor in Latin, English and History, and in Commercial Branches.

B. S. SULLIVAN, B. S.,
Instructor in Commercial Branches.

FACULTY OF UNIVERSITY

ROYAL A. BRONSON, A. M.,
Instructor in Mathematics.

ERVIN SAMUEL BEST,
Instructor in Commercial Branches

ERIC E. PRITSCHOW, A. M.,
Instructor in Modern Languages.

WALTER ORION,
Instructor in Music.

DAVID POWER,
Instructor in Music.

FREDERICK GERLACH, M. S., M. D.,
Visiting Physician and Surgeon.

I. ALVIN OLIVER,
Instructor in Shop Work.

ANTHONY PEREIRA, S. J.,
Infirmarian.

UNIVERSITY OF SANTA CLARA

ITS FAVORED LOCATION

The University, with its numerous buildings and spacious and beautiful grounds, where stately palms wave their banners seventy feet in air, is the principal feature of the interesting Mission town of Santa Clara, in the beautiful valley of the same name. It lies in Central California, forty-eight miles south of San Francisco, a city of half a million inhabitants, and is separated from San Jose, the chief city between San Francisco and Los Angeles, only by the historic Alameda, three miles long. San Jose and Santa Clara are in reality one city of more than 60,000 inhabitants, located in the center of the most densely populated valley of California. The Valley of Santa Clara is famous throughout the world for the rare beauty of its scenery, the salubrity of its climate, and the excellence of its fruits. The climate is mild and equable both in summer and winter, and on that account singularly favorable to the prosecution of persistent study and deep research. While never oppressively hot, this climate is far sunnier than the Sunny South, especially in winter; more genial and balmy than Italy or Andalusia.

When this locality was little more than a wilderness, its attractions of climate, location and scenery fascinated Bayard Taylor, the greatest traveler America has produced. Of all places on earth, to him the land of Eden was California, and of all places in California, the Vale of San Jose (as he understood it was called). Again and again he refers to it in terms of the most glowing praise.

Beside the road over which the great traveler was glad to travel in a carriage, a multitude of trains, several of them transcontinental, now rush daily. All the way from San Jose to the great city of San Francisco fifty miles away, the slopes are adorned with lovely homes; the jungles of mesquite and chapparal, so dense as hardly to allow the passage of a rabbit, have given place to trim orchards, luxuriant gardens, and pleasant homes.

FOUNDATION

It is in this scene that the University of Santa Clara is set. It is located on the site of the Old Mission of Santa Clara, Santa Clara, California.

On January 12, 1777, two Franciscan Padres, de la Pena and Murguia, planted the Mission Cross on the banks of a little stream, called from that time the Guadalupe, at a spot now forming a part of the Laurel Wood Farm, near the Agnew Asylum. Two years later, a flood destroyed the primitive buildings, both church and monastery, and the Padres in consequence sought a site on higher ground near the present railway station of Santa Clara.

There, on November 9, 1781, they laid the foundations of a large adobe church and mission buildings. Three years later, on May 15, 1784, the new church was dedicated, by the Venerable Padre Serra, then Padre Presidente of all the Missions of California.

This church, however, was so badly shattered by several earthquakes in 1812 and 1818, that the Padres were forced to build anew. This time they chose the site which the University now occupies. There on August 11, 1822, the same Padre Serra dedicated a still larger church which did service for many years till the violent earthquakes in the years 1865 and 1868 so cracked and weakened it that extensive repairs were necessary. By the year 1885 it had been almost entirely removed, having been gradually replaced by the present wooden edifice, the interior of which is a nearly perfect facsimile of its predecessor, retaining as it does, some of the old ornaments and furniture and the very ceiling of its sanctuary; while the other parts are so designed as to be a faithful reproduction of the original church.

The Mission of Santa Clara was secularized in 1836 and passed from the hands of the devoted Padres into those of politicians, who in dealing with the helpless Indians violated as well God's laws of right and justice, as the laws of the Mexican government in whose name they ruled. Santa Clara was soon robbed of her lands, and her children were oppressed or driven away to the forests.

When Rt. Rev. Joseph Sadoc Alemany, O. P., arrived on the scene, as Bishop of the Diocese of San Francisco in 1850, he found one lone Franciscan in charge of the mission, which had been restored by the American government, though in a sadly reduced form, most of the land being occupied by squatters.

Desiring to save the remnants of the mission, and also to start a college to meet the growing need of the times, the Bishop invited the Society of Jesus to Santa Clara. The invitation was accepted, and accordingly on March 19, 1851, the Rev. John Nobili, with a capital of "one hundred and fifty dollars and a brave heart," laid the foundation of the University of Santa Clara and began the work.

Nobili adapted the old adobe buildings to the requirements of a school, and in a few years numerous students were in attendance. In 1856 in the midst of his works he was stricken down, not, however, before he had seen the institution he had founded, on April 28, 1855, chartered a university.

Men after his own heart offered themselves to carry on his work, and students came from every part of California, as well as from neighboring states, so that the influence of Santa Clara was felt from the very outset. This influence has steadily increased and now there is hardly a city or town in the West which does not count an alumnus of the pioneer University among its most loyal and eminent sons.

THE PRESENT

The popularity of the University has steadily increased in the course of years. An ever increasing number of students give evidence of the efficiency of the education and training it imparts. Owing, however, to the fact that only a limited number of students could be accommodated this growth of Santa Clara has been greatly hampered.

Even more pronounced than this material growth has been the improvement wrought in the student body by the judicious selection of applicants for admission and the no less judicious elimination from the University, of students whose moral influence was not helpful. The principle of the faculty has been to receive and retain no one whose manners are not gentle and whose habits are not irreproachable. Today parents realize that education which neglects manners is a mistake and that a university which overlooks or takes little account of morals is a monstrosity.

CONSTITUENT COLLEGES

The University now posseses the following constituent Colleges: The College of Philosophy and Letters; The College of General Science; The Institute of Law; The College of Engineering, embracing Architecture and Architectural, Civil, Electrical and Mechanical Engineering; The School of Pedagogy; and the Pre-Medical Course.

FUNDS AND NEW BUILDINGS

The growth in the number of her students of recent years has made it imperative to provide ampler and more substantial accommodations for the students. For this and in order that Santa Clara may widen her scope as a first class educational institution, funds are necessary. Santa Clara stands in imperative need of an endowment. The work the University has accomplished in the past is an earnest of what she will do when increased facilities are afforded her.

An endowment, however, implies a founder or founders and benefactors. During the past few years many have helped the University and generous donations have been made. The Administration building, 200x43 feet, and the Senior Hall, both in reinforced concrete, are completed, and the Engineering building is shortly to be begun. But before other buildings for which the plans of the University provide, may be added, further benefactors will be needed. Other educational institutions, even those state-aided and richly endowed receive generous assistance in the work and hesitate not to ask it. Santa Clara feels that generous friends are not lacking, though for the want of deeper thought on the matter, few realize the importance of Christian Educational work, the immense sacrifice it entails, and the merit there is in co-operating and sharing with Christian educators in their work for God and Country and the welfare of the young men of our generation who are to become the leaders of the generation of tomorrow. The faculty of the University has given its life-services freely and gladly to the work. Those who would share with them in this great enterprise can do so most effectively by rendering material aid and contributing funds for the continuance and development of the work.

FORM OF BEQUEST

I give and bequeath unto the President and the Board of Trustees of Santa Clara College, a corporation duly incorporated under the laws of the State of California, a sum of.................... dollars.

SYSTEM OF EDUCATION

The Jesuit system of education aims at developing side by side, the moral and intellectual faculties of the student, and sending forth to the world men of sound judgment, of acute and rounded intellect, of upright and manly conscience. And since men are not made better citizens by the mere accumulation of knowledge, without a guiding and controlling force, the principal faculties to be developed are the moral faculties. Moreover, morality is to be taught continuously; it must be the underlying base, the vital force supporting and animating the whole organic structure of education. It must be the atmosphere the student breathes. It must suffuse with its light all that he reads, illumining what is noble and exposing what is base, giving to the true and false their relative light and shade.

STUDIES

It is one of the decided advantages of the system followed at Santa Clara, that the student may begin his studies in the Preparatory School conducted under the supervision of the University authorities, and then pass on, through the University Course, to graduation under the same direction and influence. This secures, besides the moral influence thus gained, a uniform and homogeneous course of teaching and training. The result of this system is a continuous and normal development of the mental faculties along well defined lines, and the possession of a clear and coherent system of principles upon the subjects which he has studied.

SESSIONS, HOLIDAYS, HOURS

The school year consists of two semesters.

The weekly holiday is on Wednesday.

Lectures and classes begin daily at 8:50 A. M. and close at 3:30 P. M.

There are additional lectures in the Institute of Law every evening at 7:15.

COMMITTEES

Examinations—

Sophomore—The Professors of Sophomore and Freshman Courses.

Junior—The Director of Studies, and the Professors of the Junior Courses.

Senior—The President, the Director of Studies, and the Professors of the Senior Courses.

Theses—The Director of Studies and the Professors of Junior and Senior Courses.

Athletics—The Director of Discipline, the Director of Studies and the Faculty Director, assisted by the Officers of the Student Body.

Dramatics and Public Exercises—The President, the Director of Studies, the Director of Discipline, the President of the Senior Dramatic Club.

"The Redwood"—The Director of Studies, the Faculty Director guiding the staff, and the Professors of Philosophy and English.

Post-Graduate Studies—The President, the Director of Studies, and the Professors of the subjects in which the Post-Graduate work is taken.

Discipline—The Director of Discipline, the Assistant Director of Discipline and the Director of Studies.

Attendance—The Director of Studies, and the Director of Discipline.

Scholarship and Standing—The Director of Studies, and the Deans of the several Colleges.

The University Bulletin—The President, the Director of Studies and the Faculty Director of the Redwood.

SCHOLARSHIPS

Every year several deserving young men of high character and aspirations, whose means do not permit their attending the university, appeal to the Faculty for assistance to obtain the education for which their talents and vocation fit them. There is scarcely a university in the United States which is not provided with a fund for this purpose, and a relatively large percentage of successful college men spring from the class of assisted students. It is clearly a noble benefaction to contribute to such a purpose in any case. But this is especially so in the case of those who apply for help to the University of Santa Clara. They are as a rule young men of high standing, who understand the paramount value of an education in a university which aims at the highest intellectual development of the student, while devoting no less attention to the perfect development of his moral character. As a consequence it follows that to assist them in attaining their desire is to aid picked young men whose future is more than ordinarily full of promise, and who are destined to exert a most powerful influence on those among whom their lives will be spent.

It is the intention of the Faculty of the University of Santa Clara to make an earnest effort to supply this pressing need, by establishing free scholarships fo resident and non-resident students, so that worthy young men may receive the help they desire. For this purpose an appeal is made to all who appreciate the importance of the matter.

The Scholarships to be founded will be of two classes, perpetual and temporary. By establishing a perpetual scholarship the donor will maintain one student at the University of Santa Clara in perpetuity. A temporary scholarship will maintain one student at the University during the four years of his course. The amount contributed will be invested in reliable securities, the interest of which will support the student. The cost of founding Scholarships is as follows:

Perpetual Scholarship for a resident student—board, lodging, etc., tuition, text-books	$12,500.00
A perpetual Scholarship for a day student—tuition and text-books	$ 3,000.00
A temporary Scholarship for a resident student—board, lodging, tuition, text-books, for four years	$ 2,000.00
A temporary Scholarship for a day student—tuition, text-books, etc., for four years	$ 500.00

It is the desire of the Faculty to name these Scholarships after their founders, that thus the recipients of their generosity may know to whom they are indebted for their education, and ever retain grateful remembrance of them.

We are pleased to announce that the first perpetual Scholarship for a resident student has this year been established through the generosity of a Friend in memory of the late Mrs. Alice Phelan Sullivan. It will be known as the Alice Phelan Sullivan Memorial Scholarship.

GENERAL REGULATIONS

No one will be admitted as a student unless he has a good moral character.

Candidates for admission must present satisfactory recommendations. Those from other educational institutions must be recommended by the institutions whence they came. For scholarship requirements cf. Graduate and Undergraduate Departments.

Students are not received for a shorter period than one semester.

As the Faculty of the University profess the Catholic Religion, the exercises of religious worship are Catholic; but members of any religious denomination are received, provided they be willing, for the sake of order and uniformity, respectfully to conform to the religious observances of the University.

No student will be permitted to leave the University on visits of any length, except at the Christmas holidays from the twenty-third of December to the third of January, if such be the wish of his parents or guardian. Parents are requested not to call their sons home at other times, except in cases of urgent necessity, as such interruptions, besides tending to undermine or prevent the acquisition of habits of concentration and persevering work, are apt to result in poor scholarship and in the consequent wrecking of the whole career of the student.

A recess at Thanksgiving and Easter may be given at the discretion of the President.

Students who, having left the University for the summer vacation, or Christmas holidays, fail to be present on the day for the re-opening of class, will, by the fact of absence, be excluded from the University, or at the discretion of the Faculty from privileges until the following semester, particularly the privilege of visiting friends and relatives on the Second Wednesday, unless parents or guardians show cause of absence, which the Faculty shall consider wholly sufficient.

The students are not allowed the use of tobacco, except in First Division with written permission from parents or guardians.

Students are not permitted to have books or other publications that have not been approved by the Vice President.

To cultivate the heart, no less than to develop the intellectual and physical faculties of the students, is a duty kept constantly and sacredly in view.

The students' correspondence is subject to the inspection and control of the President.

To hold meetings or to form clubs or societies of any kind without the consent of the President; the habitual use of profane language; gross immorality committed either within or without the precincts of the Institution; the possession or distribution of immoral publications or pictures; intoxication; procuring or introducing intoxicating liquors, directly or indirectly into the University; habitual idleness and violation of the rules of the University; obstinate refusal to submit to a punishment inflicted; absence from the University at night without leave from the President; avowed principles of infidelity; express contempt or ridicule of religion, are offenses which expose the offenders to dismissal.

No rebate will be allowed in favor of those who enter later, nor, in the case of any student, for absence at the opening of the semesters in September and February. No reduction is made when students are withdrawn from the University during the semester for other reasons than serious illness. Degrees will not be conferred on any student whose account with the University has not been settled.

An itemized bill is sent at the end of each semester.

(1) Semester bills and other accounts are subject to sight draft if not paid within ten days after they have been rendered.

(2) Remittances should be made payable to the order of the University of Santa Clara.

(3) No one may be temporarily or permanently withdrawn from the University without the President being directly notified. In either event money should be sent for the trip, and, in the latter, accounts ought also to be settled.

(4) A limited number of student waiters can be received at reduced rates.

(5) There are no charges for the services of the College physician. Medicines procured at the College infirmary will be charged as used by individuals.

A HEALTH REQUIREMENT IS EXACTED.

All students are subject to examination by the College physician.

TO APPLICANTS.

Fill out an application blank and forward same to the President, enclosing a certificate of the studies you have completed with a testimonial as to your character and diligence, signed by the Principal of the school you have last attended.

The articles which each student should bring with him are, more or less: two pairs of sheets, three pillow cases, two counterpanes, three suits of clothes, a sufficient number of shirts, drawers, handkerchiefs, socks, shoes, napkins, towels, combs, brushes, etc., all, without exception, marked with his name distinctly and imperishably before he comes.

Promptness in reaching the University on the day fixed for the opening of classes is necessary. It is essential that Parents and Students understand this clearly from the beginning of their connection with the University, as promptness in returning from vacations and recesses, which is requisite in order to prevent the loss of valuable time and the forming of habits of procrastination and negligence of duty, is strictly insisted on.

DEPARTMENTS OF THE UNIVERSITY

DEPARTMENTS, CURRICULA, COURSES

The University includes the Graduate and Undergraduate Departments.

GRADUATE DEPARTMENT

Aim and Scope—The Graduate Department offers students who have attained to Academic Degrees, studies leading to the higher ones of Master or Doctor as the case may be. The determination of these courses rests with the Committee on Post-graduate Studies. A sufficiently wide option is alloted, much of the instruction being in the form of direction along lines of original research. Courses may be had in Philosophy, English, Latin, Greek, Mathematics, Sociology and Economics, as well as in the professional Colleges of Law, Engineering and Architecture. To those who have taken their Bachelor's Degree with Law, the Degree of LL. B., is granted on the completion of the full course of the Institute of Law.

Theses—Before one is admitted to a higher degree, a thesis must be submitted on a subject chosen by the student with the approbation of the Committee on Theses. It must bear on the matter studied, or at least on cognate matter, and it shall consist of no fewer than 5000 words. The thesis should be typewritten on National White unruled paper, 8½x10¼ inches. The ultimate decision as to whether the effort merits the Degree rests with the Committee on Theses.

UNDERGRADUATE DEPARTMENTS

These include:

A. THE COLLEGE OF PHILOSOPHY AND LETTERS.

A four years' college course, leading to the degree of Bachelor of Arts.

B. THE COLLEGE OF GENERAL SCIENCE.

A four years' college course, leading to the degree of Bachelor of Science.

C. THE INSTITUTE OF LAW.

A standard three years' course of law, leading to the degree of Bachelor of Laws.

D. THE COLLEGE OF ENGINEERING.

(a) Civil Engineering. A four years' course leading to the degree of Bachelor of Science in Civil Engineering.

(b) Mechanical Engineering. A four years' course leading to the degree of Bachelor of Science in Mechanical Engineering.

(c) Electrical Engineering. A four years' course leading to the degree of Bachelor of Science in Electrical Engineering.

E. THE COLLEGE OF ARCHITECTURE.

A four years' course leading to the degree of Bachelor of Science in Architecture.

F. THE SCHOOL OF PEDAGOGY.

A course of studies in Education which aims at preparing graduates of the University for capable service in the field of high school education. ....

G. THE PRE-MEDICAL COURSE.

A two years' course of studies in Chemistry, Biology, and Anatomy, which is recommended to students contemplating entrance into medical schools.

ENTRANCE REQUIREMENTS.

Applicants for admission to the Freshman Year of the College of Engineering must either (1) have completed the regular Four-Year High School course of the Preparatory School of the University, or (2) have completed a similar course in an accredited High School, or (3) pass an examination based on a four-year course amounting in the aggregate to fifteen units. Of these fifteen units, ten or more are prescribed and required of all applicants; the rest are elective from the list of optional subjects.

CONDITIONS.

In certain cases, at the discretion of the Committee on Entrance Standing, which shall decide on the merits of each particular case, conditions in elective branches to the amount of not more than two units may be allowed. All conditions must, however, be removed by the end of the Freshman year.

As the prescriptions in the classical languages are difficult for secondary schools to meet, two conditions may be permitted in these languages in cases of special merit.

COLLEGE OF PHILOSOPHY AND LETTERS.

SUBJECTS PRESCRIBED.

English	3 units
History	2 units
Latin	4 units
Greek	2 units
Algebra	1½ units
Geometry	1½ units

ELECTIVES.

Physics	1 unit
Chemistry	1 unit
Foreign Languages	2 units
English	1 unit
History	2 units
Trigonometry	½ unit

COLLEGE OF GENERAL SCIENCE.

SUBJECTS PRESCRIBED.

English	3 units
History	2 units
Foreign Languages	2 units
Algebra	1½ units
Geometry	1½ units

ELECTIVES.

Physics	1 unit
Chemistry	1 unit
Foreign Languages	2 units
English	1 unit
History	2 units
Trigonometry	½ unit

COLLEGE OF ENGINEERING

SUBJECTS PRESCRIBED.

English	3 units
History	2 units
Foreign Languages	2 units
Algebra	1½ units
Geometry	1½ units

ELECTIVES.

Physics	1 unit
Chemistry	1 unit
Foreign Languages	2 units
English	1 unit
History	2 units
Trigonometry	½ unit

To count a "unit" a subject must be taught five times a week, in periods of not less than forty-five minutes, for a school year of not less than thirty-six weeks.

INSTITUTE OF LAW

CANDIDATES FOR DEGREES

Students who desire to enter the Institute of Law must present two years of College work at Santa Clara or some other University or College whose requirements are equally stringent.

Students lacking two years of College work may matriculate in the usual manner in the College of Philosophy and Letters or in the College of General Science. At the completion of two full years of College they will be admitted to the courses of the Institute of Law.

On regular students at the completion of the law course the degree of Bachelor of Laws will be conferred.

SPECIAL STUDENTS.

There are, however, many gifted young men whose circumstances do not permit their receiving a college education. They may, nevertheless, owing to the particular nature of their occupations, have acquired a degree of knowledge along particular lines quite equal if not superior to that of students who have had the advantage of regular academic training; while their greater maturity and seriousness, and, it may be, their possession of the legal mind, renders them especially fitted for the study of law.

This is true particularly of young men employed in insurance and real estate offices, banks, railroad offices and law firms, as well as of those who have studied privately and so acquired knowledge for which, because of its variety and mode of acquisition, educational institutions are unable, as a rule, to give credit.

To such young men the Santa Clara Law Department will be open, though dependently on the approval of the Faculty in each case. On the completion of the course, they will be given a certifcate attesting the fact.

COLLEGE OF PHILOSOPHY AND LETTERS AND GENERAL SCIENCE

SENIOR YEAR		JUNIOR YEAR		SOPHOMORE YEAR		FRESHMAN YEAR	
Subject	Hrs.	Subject	Hrs.	Subject	Hrs.	Subject	Hrs.
Phil. of Religion	2	Phil. of Religion	2	Evidences	2	Evidences	2
Ethics	10	Mental Philosophy	10	English	5	English	5
Economics	2	Elective	14	Mathematics	3	Mathematics	3
Elective	14			Physics	3	Chemistry	3
				Physics, Lab.	4	Chemistry, Lab.	4
				History	2	History	2
				Latin	5	Latin	5
				Greek	4	Greek	4

Modern Languages are substituted for the Classics in the College of Science

COLLEGE OF PHILOSOPHY AND LETTERS

The College of Philosophy and Letters covers a curriculum of four years and leads to the Degree of Bachelor of Arts. It comprises courses of studies selected with special regard to their cultural value, and which, far from being of merely cultural importance, afford the most solid foundation for many of the learned professions and for those larger commercial pursuits characteristic of the present age, which demand intellects carefully trained and poised by the most efficient educational instruments available.

During the first two years of this curriculum the chief studies are the classical languages and literatures, English, Mathematics, Natural Sciences and History. In the last two years courses in philosophy, ethics and economics are prescribed, and elective work, which counts as one year for the Degree of Bachelor of Arts, may be taken in the Institute of Law, in the Premedical Department, in the Department of Pedagogy, and other departments of the University.

COLLEGE OF GENERAL SCIENCE

The Curriculum of the College of General Science extends over four years and leads to the Degree of Bachelor of Science. Students whose preparatory training in the classics was not sufficient to warrant their entrance into the College of Philosophy and Letters are eligible to this curriculum, in which, with the exception of classical literatures, for which modern languages and literature are substituted, are contained all the strong studies of the curriculum of the College of Philosophy and Letters .

At the beginning of the third and Junior Year in this course students may enter the Institute of Law, the Premedical Department, the Department of Pedagogy or elect other studies from the University cirricula to the amount of one year's work in credits for the Degree of Bachelor of Science.

PHILOSOPHY

Course 1. Logic.

Ten Hours, One Semester

(a) **Dialectics.** Simple Apprehensions. Terms—their Supposition. The Definitions and the Division. Judgements. Propositions,—Classification accordding to Quantity and Quality. Opposition, Equivalence, Conversion, Reasoning,—underlying Principles. The Syllogism; its Laws and its Species. Induction. Method. The Circle.

(b) **Critics.** Logical Truth and Falsity. States of the mind as to truth. Certitude; Degree, Elements, Kinds. Scepticism, Universal and Partial. Consciousness. The Senses. Nominalism, Conceptualism, Realism, Ultra-Realism. Testimony. Tradition, history. The New Criticism. Reason and Revelation. The Ultimate Motive of Certitude. Evidence.

Course 2. Basic Ontology.

Ten Hours, One Semester

(a) **Basic Ontology.** Being. Analogy. Axioms.

Unity, Identity, Distinction—Real and Logical. Truth. Goodness, Evil. Act and Potentiality. Essence and Existence. Possibility, Extrinsic, Intrinsic. Sources of the latter. Substance—Complete, Incomplete—Hypostasis, Person. Accident—Absolute, Relative. The Categories of Aristotle.

(b) **Ontology and Etiology.** The Principle. The Cause. The Condition. The Occasion. Matter—Primordial and Secondary. Form—Substantial, Accidental. Efficiency and Action. Finality. The Order of Intention and the Order of Achievement. The Exemplar. Grades of Perfection. Beauty.

(c) **Cosmology.** Qualities of Bodies. Quantity—Discrete and Continuous. Mathematical Divisibility. Formal Effect. Impenetrability. Space. Place. Change—Substantial, Accidental. Motion and Time. Laws of Nature. Atomism, Dynamism, Hylomorphism.

(d) **Biology.** Organic Life Defined. Vegetable Functions. The Vital Principle in the Plant. Its Superiority to Anorganic Forces. Sensation,—External, Internal. Imagination, Memory, Instinct, Sleep. The Rank of the Animal Soul. Origin of Species. Theory of Independent Formations. Monistic Evolution. Darwinism.

(e) **Psychology.** (a) The Intellect. Genesis of Ideas. Self-consciousness. Judgement and Reasoning. Hypothesis of Innate Ideas. Empiricism. Ontologism. (b) The Will. Freedom. Arguments. Control over Faculties. (c) The Soul. Substantiality, Simplicity, Spirituality, Immortality. The Unity of Each Individual. Union of Body and Soul.

Origin of the Human Soul. Traducianism. Creacionism. Pre-existentianism, Unity and Antiquity of the Race.

Course 3. Theodicy and General Ethics.

Ten Hours, One Semester

(a) Existence and Nature of God. Metaphysical, Physical, Moral Proofs. Aseity. Infinity, Immensity. (b) Life of God. Intelligence. The Futuribles. Will—Primary and Secondary Object. Moral and Physical Evil. (c) Action of God in the Universe. Creation, Conservation, Concurrence, Providence. Miracles.

(b) General Ethics. Nature, Object Necessity of Ethics. Teleology, Beatitude. Human Acts. Voluntary and Involuntary Acts. Morality of Human Acts and its Determinants. Passions. Habits. Moral Obligation and its Origin. Eternal Law. Natural Law. Sanction of Law. False Norms of Morality. Utilitarianism. Hedonism. Altruism.

Course 4. Special Ethics.

Ten Hours, One Semester

Duties, Worship. Internal and External Worship. False Worship. Homicide. Self-defense. Suicide. Dueling. Veracity. Charity. Rights. Private Ownership. Communism. Socialism. Agrarain Socialism. Henry George. Herbert Spencer. Capital and Labor. Domestic Society. Matrimony. Divorce. Celibacy. Parental Authority, Education. Relation of Master and Servant. Civil Society; its Nature and Origin. False Theories of Hobbes, Rousseau, Locke. Forms, Scope, Aim, Functions of Civil Government. Suffrage. Liberty of Opinion, of the Press, of Worship, of Association. International Law. Church and State.

ECONOMICS

Course 1. Production and Consumption.

Two Hours, One Semester

Productive Capacities of Earth, of Man, Industrial Organization, Progress, Locality and Dimensions. Theory of Consumption, Particulars. Family Life and Law. Growth and Decay of Nations.

Course 2. Exchange.

Two Hours, One Semester

Trade in General. Market Prices. Non-Market Prices. Differential Gains. International Trade, Money. Coinage and Tokens. Credit and Banking. The Foreign Exchanges. Use and Abuse of Commercial Credit. Uncommercial Credit.

Course 3. Distribution.

Two Hours, One Semester

Profits. Interest. Wages, Rich and Poor. An Apologia for the Rich. Mistaken Theories on Riches. Liberty and Law. Association and Responsibility.

Course 4. Public Finance.

Two Hours, One Semester

Functions and Cost of Government. Public Ownership and Management. Principles of Taxation. Different Kinds of Taxes. Public Debts.

Course 5. Economic Science.

Two Hours, One Semester

Scope, method and history of the Science of Economics.

SOCIOLOGY

Course 1. Socialism and Trade Unions.

Two Hours, One Semester

A lecture course dealing with the history, development and trend of Socialism and Trade Unionism. This course involves copious collateral reading and the verification of inferences by investigation into the aspirations and methods of present day representatives of the movements studied.

Course 2. Capitalism.

Two Hours, One Semester

A course dealing with the history and estimation of accumulated private wealth and following it to its present day forms and characteristics.

Cource 3. Condition of the Wage Earners.

Two Hours, One Semester

This course examines into the actual condition of the working classes and implies an investigation into the helpful and hindering influences which affect the workers and the consideration of the efficacy of present day methods for the betterment of the condition of the wage earners.

Course 4. Co-operation. Competition and Combination.

Two Hours, One Quarter.

A more critical and profound examination into the basic principles of present day economic institutions and of the reforms suggested to remedy their defects.

PHYSICS

Course 1. Mechanics, Molecular Physics, Sound.

Three Hours, One Semester

General principles of matter. General properties of Bodies. Equilibrium. Gravity. The balance. Laws of falling bodies. Pendulum. Properties peculiar to Solids. Hydrostatics. Capillarity, endosmose, diffusion, absorption. Hydro-dynamics. The property of gases. Barometers. Measurement of the elastic force of gases. Aerodynamics. Production, propagation and reflection of sound. Measurement of the number of vibrations. The physical theory of music.

Course 2. Light, Heat, Electricity.

Three Hours, One Semester.

Transmission, velocity, intensity and reflection of light. Mirrors. Single refraction. Lenses. Dispersion and achromatism. Optical instruments. The eye Sources of light. Phosphorescence. Double refraction. Interference and polarization. Properties of magnetism. Methods of magnetism. Laws of magnetic action. Terrestrial magnetism. Fundamental principles of frictional electricity. Quantitative laws of electric action. Distribution. Electrostatic induction of influence. Electric machines. Condensation of elecrticity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electromagnetic induction. Passage of electricity through gases. Magneto and dynamo electric machines. Diamagnetism. Connection between electricity and light. Physiological action of the current. Animal electricity.

Course 3. Physical Measurements.

Four Hours, One Semester.

The use of scales. The straight and barometer vernier. The spherometer. Micrometer wire gauge. The Cathetometer. The micrometer and compound microscope. Angular measurements. The circular vernier, the optical lever. Poggendorff's method and the spirit level. Estimation of mass. General theory of the balance. Weighing by vibrations. Exact weights and errors in weighing. Measurement of area and volume. Determination of density. Relative densities. Elasticity, tenacity and capillarity. Determination of atmospheric pressure. Time, gravitation and moments of inertia. Pendulum. Determination of gravity by Kater's and Bessel's method. Determination of the velocity and pitch of sound.

Course 4. Physical Measurements.

Four Hours, One Semester.

Elementary electro-statics. Electrification by friction, conduction and induction. Magnetism. Determination of horizontal force and magnetic moment. Fundamental experiments in Volatic electricity. The galvanoscope and the galvanometer. Determination of E. M. F. Wheatstone's bridge. Calibration of galvanoscope. Measurements of resistance. The high resistance differential astatic galvanometer. Measurement of galvanometer resistance. Thomson's method. Differential method. Use of side meter bridge. Carey Foster's method. Measurement of very low resistances. The method of comparison of potentials, projection of equal potentials and auxiliary conductors. Measurement of high resistances. The direct deflection method. Electrolyte resistance. Electrolytic resistance by alternating currents. The tangent galvanometer. Use of the standard galvanometer and the determination of E. M. F. Application of Joule's law. Use of potential galvanometer. Determination of the magnetic elements. Electro-magnetism and electro-magnetic induction. Action of linear current on magnet. Biot and Savart's law. Proof of electro-magnetic laws. Magnetic action of a solenoid. Laws of the electro-magnet. Induction experiments. Induction balance of Hughes. Damping. Comparison of resistance by magneto conductor. Use of earth inductor. Study of magnetic distribution. The condenser. Determination of the absolute capacity of a condenser. Electrometers.

MATHEMATICS

Course 1. Plane Trigonometry.

Three Hours, One Semester.

A course in Plane Trigonometry with many applications so as to give a thorough review of algebra and geometry. Practical problems.

Course 2. Spherical Trigonometry, Advanced Algebra.

Three Hours, One Semester.

A brief course intended to familiarize the student with Spherical Trigonometry and some of its applications. The last four months of the semester will be devoted to Higher Algebra, special attention being given to graphical methods.

Course 3. Analytic Geometry.

Four Hours, One Semester.

A course covering the general principles and more practical applications of Plane Analytic Geometry.

Course 4. Analytic Geometry and Calculus.

Three Hours, One Semester.

A brief course in Solid Analytic Geometry and elementary Calculus intended to acquaint the student with the methods of higher mathematics.

Course 5. Differential Calculus.

Three Hours, One Semester.

A course intended for Seniors and covering thoroughly the theoretical parts of the subject.

Course 6. Integral Calculus.

Four Hours, One Semester.

A course similar to course 5 in Integral Calculus.

For other Courses in Mathematics cf. The College of Engineering.

Course 9. The Short Story.

Two Hours, Third Quarter.

Nature, development, and technique of the short story, with criticisms of selected models.

Course 10. Nineteenth Century Prose Stylists.

Two Hours, Third Quarter.

A critical study and analysis of the characteristic features of the style of selected authors.

Course 11. The Magazine Article.

Three Hours, Fourth Quarter.

Nature and characteristics, with selected readings and criticisms.

Course 12. Narrative and Exposition.

Four Hours, Second Semester, One Hour Credit.

Practice in the writing of essays, magazine articles, and short stories. Supplementary to courses 7, 8, 9, 10 and 11.

Course 13. Oral Expression and Interpretation.

One Hour, Both Semesters.

Readings and memory recitations, with special regard to emphasis, rhythm, harmony and gesture. Individual training.

Course 14. The Theory of Argumentative Writing.

One Hour, First Semester.

Lectures and recitations. A course based on Aristotle, Cicero, Quintilian, and Kleutgen, and aiming at a rational exposition of the principles of oratorical reasoning and persuasion.

Course 15. Representative Modern Orators.

Two Hours, Third Quarter.

Readings and criticisms. A course supplementing course 14 but more concrete in scope.

Course 16. Sources and Materials in Public Speaking.

Two Hours, Third Quarter.

Lectures and siminary work. Each student is required to gather the material for three speeches on topics assigned by the professor.

Course 17. Extempore Speaking and Brief-Making.

One Hour, Third Quarter.

A course supplementary to courses 15 and 16, and dealing with the methods and the practice of extempore speaking.

Course 18. The Speech for Special Occasions.

Three Hours, Fourth Quarter.

A practical study of the distinguishing characteristics of speeches for special occasions.

Course 19. Oratorical Composition.

Three Hours, Both Semesters, Two Hours Credit.

Weekly exercises in speech-writing with special reference to course 14.

Course 20. Drama.

Three Hours, Fourth Quarter.

The principles of dramatical composition. Several dramas are read and analysed, special attention being given to Shakespeare.

Course 21. Special Composition.

One Hour, One Semester.

A course consisting chiefly in written work and required of all upper classmen whose writing in English is such as to make additional facilities for practice in English Composition desirable.

N. B.—Courses 3, 4 and 5 are given alternately with Course 2. Courses 9 and 10 are given alternately with Course 8. Course 20 is given alternately with Course 18.

LATIN

Course 1. Virgil—The Aeneid.

Four Hours, One Semester.

After reading books VII—XII, the poem will be studied as a whole, special attention being given to the sources, to the epic technique and literary art of Virgil and to the tracing of his influence in the literature of the world.

Course 2. Rapid Reading 1.

One Hour, One Semester.

A course intended to give to the student a broad knowledge of Roman life and literature and to facilitate the study of Latin sources.

Course 3. Latin Composition 1.

Two Hours, One Semester

Composition in narration and description based chiefly on the text of the Aeneid and implying a discrimination of the vocabulary, and syntax of prose and verse. Students will write two compositions weekly.

Course 4. The Latin Historians.

Four Hours, One Semester.

Copious readings in Sallust, Curtius, Pliny and Livy, with critical consideration of the historical works of these writers and collateral reading directed to reach an appreciation of their place in Latin literature.

Course 5. Rapid Reading 2.

One Hour, One Semester.

The complete works of Tacitus will be read in this course.

Course 6. Latin Composition 2.

Two Hours, One Semester

A continuation of Course 3, but based on the Latin historians.

Course 7. Cicero.

Three Hours, One Semester.

The orations studied as models of oratorical art, rapid reading, analysis, discussion, criticism.

Course 8. Horace.

Three Hours, One Semester.

The Odes Books I—IV, will be read and carefully studied. Students will memorize selected odes and portions of odes. Such phases of Roman life as are suggested will be the subject of collateral reading under the direction of the professor.

Course 9. Latin Composition.

Two Hours, One Semester

Written work on subjects assigned by the professor will be required twice a week. Students will be expected to show facility and elegance of diction in their written work.

Course 10. Thesis.

Five Hours, One Semester.

At the beginning of the second Semester of the Sophomore year, the professor after consulting with the students shall assign to each a thesis implying copious reading in Latin. The Thesis shall be typewritten and contain at least 6000 words.

GREEK

Course 1. Simple Greek Prose.

Four Hours, One Semester.

Selections are taken from the Anabasis, Chrysostom, Plato, Gregory and Nazianzen. This course is open to those who have completed the course of Elementary Greek.

Course 2. Simple Greek Poetry.

Four Hours, One Semester.

Elegies of Gregory Nazianzen, Idylls of Theocritus, selected portions of the Odyssey of Homer. In this course, Greek life and customs are studied in detail, special attention being given to the various dialects.

Course 3. Simple Greek Composition.

One Hour, Both Semesters.

Systematic training in the writing of simple Greek, with copious imitations taken from authors studied in Courses 1 and 2.

Course 4. Greek Literature, I.

Four Hours, One Semester.

Reading of selected portions of the Odyssey and Iliad, Sophocles, Pindar, and Euripides. In this course special attention is given to the Greek epic as a whole and Greek tragedy and lyric poetry are studied in detail.

Course 5. Greek Literature, II.

Four Hours, One Semester.

Representative types of the Grecian orators, Chrysostom, Basil, Demosthenes, will be carefully read and studied as a whole.

Course 6. Rapid Reading.

One Hour, Both Semesters.

Sight reading of the easier portions of the Greek historians, and written compositions in imitation.

HISTORY

Course 1. European History, 1305-1563.

Two Hours, One Semester

Exile of the Papacy and the Great Western Schism. The Hundred Years War. The Wars of the Roses. Consolidation of the European Monarchies. The Inquisition. The Renaissance. General character of the period. The Age of Charles V. The Protestant Revolution and the Catholic Revival.

Course 2. European History, 1563-1714.

Two Hours, One Semester

The Hugenot War in France. Philip II., Mary

Stuart and Elizabeth. The Thirty Years War. The Puritan Revolution. The Age of Louis XIV.

Course 3. European History, 1714-1800.

Two Hours, One Semester

The Hanoverian Succession. The making of Russia. Mary Teresa and Frederick II. Wars of the Suppression. The colonies in North America. The Seven Years War. The Division of Poland. Progress of the Political and Social Revolution of the Eighteenth Century. The American War of Independence. The French Revolution.

Course 4. European and American History, 1800.

Two Hours, One Semester

The Era of Napolean I. Catholic Emancipation in Great Britain. The Revolution of the Barricades and of the Cabinet. The Civil War in the United States and its causes. Our own times.

Lectures on the moral, political, economic, and social aspects of these periods of history, are given twice every week. The subjects enumerated are studied in detail.

PHILOSOPHY OF RELIGION, EVIDENCES, MORALS

Course 1. The Essentials of Christian Doctrine 1.

Two Hours, One Semester

Various Creeds. The Apostle's Creed. Each Article of the Creed is studied in particular, attention being given to any subject bearing directly on these articles, as Sin, The Powers of the Church, Infalibility, etc.

Course 2. The Essentials of Christian Doctrine 2.

Two Hours, One Semester

The Law of God. What is commanded and forbidden by the Decalogue is studied in detail. The Precepts of the Church, Grace, Prayer, and each of the Seven Sacraments together with collateral subjects.

Course 3. Truth of the Catholic Religion.

Two Hours, One Semester

(a) **Christianity a revealed religion.** What Religion is. What Revelation is. Kinds of revelations. What revelation necessary to know truths above human ken. Man's attitude toward Revelation. Primitive, Patriarchal, Mosaic Revelation. The Divine origin of Pre-Christian Revelation. The Christian Revelation; its origin, evidences of divinity of its origin.

(b) **The Church. The Dispenser of the Christian Religion.** Institution of the Church. End of the Church. Constitution of the Church. Marks of the Church. The teaching office of the Church. Sources of the Church's teaching. The rule of Faith.

Course 4. Christian Dogma.

Two Hours, One Semester

(a) **God the Author and Restorer of our Salvation.** The existence, nature, and attributes of God. The Divine Trinity. God the Creator of the universe. Various grades of creation. The spiritual and material world. Man. Relation of different orders of creation to one another. God the Redeemer of the fallen man. Decree and plan of redemption. The Redeemer one person and two natures. The work of redemption.

(b) **The Plan of Redemption as realized in Individuals.** Grace, actual, habitual or sanctifying. The Sacraments as a means of Grace. The Sacraments are studied in general—their matter and form,—their efficacy and the dispositions requisite to receive them validly and with fruit. Then each Sacrament is studied in detail. The Church as a means of salvation. The four last things.

Course 5. Christian Morals.

Two Hours, One Semester

(a) **Christian Morals in General.** Law as the objective norm of human actions. Conscience as the subjective norm of human actions. The condition of morality. Moral good and moral evil.

(b) **Christian Morals in Particular.** The Christian's duties toward God,—Faith, Hope, Charity. Religion. Direct and indirect acts of worship. The Church as the controller of religious worship. Duties towards ourselves and our neighbor,—general and particular.

(c) **Works of supererogation or Christian perfection.**

MODERN LANGUAGES.

French

Course 1. Elementary French I.

Four Hours, One Semester.

In this course the student is carefully drilled in elementary grammar up to the irregular verbs, attention also being given to acquiring a vocabulary of the more common words.

Course 2. Elementary French II.

Four Hours, One Semester.

A continuation of the preceding course. Special attention is given to the more important irregular verbs, the memorizing of words, and translation of French into English and vice versa.

Course 3. Intermediate French I.

Four Hours, One Semester.

A thorough review of grammar and syntax. .The object of this course is to acquaint the student with the scientific vocabulary and enable him to read the more simple scientific French.

Course 4. Intermediate French II.

Four Hours, One Semester.

This course continues the work begun in Course 3. Regular exercises are given in written work and copious reading is made from the standard scientific works in order to fit the student for professional reading.

Course 5. Advanced French I.

Four Hours, One Semester.

A thorough review is made of Courses 1 and 2, by means of conversational exercises, sight reading and written exercises. Selections are read from the more noted French writers.

Course 6. Advanced French II.

Four Hours, One Semester.

A continuation of Course 5, with conversational exercises and copious readings from the French authors.

German

Course 1. Elementary German I.

Four Hours, One Semester.

Elements of German Grammar: Drill in pronunciation. Vocabulary.

Course 2. Elementary German II.

Four Hours, One Semester.

A continuation of Course 1. Syntax, Oral and written exercises. Reading from the more simple German prose.

Course 3. Intermediate German II.

Four Hours, One Semester.

Review of syntax. Translation. Oral and written exercises. Reading from the German scientific works to acquire a technical vocabulary.

Course 4. Intermediate German II.

Four Hours, One Semester.

Reading and written and oral exercises in technical German. This course aims at preparing the student to undertake the reading of the more difficult scientific works.

Course 5. Advanved German I.

Four Hours, One Semester.

A study of the German prose authors with copious selected reading.

Course 6: Advanced German II.

Three Hours, One Semester.

A more extensive course in German literature, especially in German poetry.

COLLEGE OF ENGINEERING

The foundation of the College of Engineering in the University of Santa Clara was the result of repeated and urgent requests that opportunities should be given young men, ambitious to follow the Engineering profession, to pursue and complete the studies leading thereto in an environment and atmosphere conducive as well to deep persevering study as to cultural and moral development.

To meet this demand, the Faculty of the University has added sound and thorough courses in Architectural, Civil, Electrical and Mechanical Engineering. Each of these departments is in the hands of experienced and practical engineers who devote their whole time and attention to the success of their work. As is traditional at Santa Clara, students in Engineering are given individual care, assistance, advice and encouragement. The work exacted is of the highest type, nevertheless, owing to this individual care and to the judicious admission of students as well as the prompt elimination from the various departments of students found to be inadequately prepared in fundamental studies or in seriousness of purpose, there is very little likelihood and no excuse for failure on the part of the student.

The demand for engineers is today greater than ever before. Owing to the vast extent of our State and of the neighboring States, as well as of Alaska on the North and the Great Mexican and Central American Republics on the South, with which California is so intimately connected, and owing moreover to the fact that these countries are as yet comparatively undeveloped and that California, on account of her unexcelled climate and almost unlimited natural sources of power, is bound to take her place among the foremost manufacturing states of the Union, it is evident that this demand for first class engineers will go on increasing for many decades to come. Logically it is California that should supply a very great proportion of this demand. The young men of our State have, therefore, a most powerful incentive to enter the engineering profession in its various branches, in which, granted a broad and thorough preparation, they are assured of success.

That this preparation can be given by mere technical schools is no longer contended. The engineer today must be more than a machinist, electrician or surveyor. He can no longer be a self-made man in the old sense. His mind must possess the acumen and culture which only a broad college training and college association can give, and his acquaintance with and love of mathematics and science should be the foundation on which his knowledge of their technical applications is based.

This is the ideal which Santa Clara cherishes for the engineers who shall receive their education from her.

COURSES.

Four year Courses are offered leading to the degrees of Bachelor of Science in Architecture, Bachelor of Science in Architectural Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering and Bachelor of Science in Mechanical Engineering. These courses aim, first, to give the student a thorough knowledge of the sciences on which all Engineering is based; second, to develop his ability to acquire accurate information; third, to develop his judgment by practical work so that he may be able to use his knowledge and information to the best advantage.

ARCHITECTURE AND ARCHITECTURAL ENGINEERING.

The Courses in Architecture and Architectural Engineering give facility in the application of the fundamental principles of beauty and strength to buildings. Architectural forms and principles and their application in Architectural design are taken up, together with the strength of materials and the design of trusses, columns and reinforced concrete, the whole enabling the student to produce correct, beautiful and economical works of Architecture. The course in Architecture is intended for those who wish to specialize in pure design leaving the determination of the size of the more complicated members of their structures to an engineer. The course in Architectural Engineering is intended for those whose mathematical ability will allow them to design structures, not only for shape, but also for strength.

CIVIL ENGINEERING.

Civil Engineering covers the field of structural work (steel, concrete and stone buildings and bridges), municipal engineering (roads, pavements and sewers), water power development, irrigation and railroad construction. These are all based on the fundamental sciences of Mathematics, Physics and Chemistry, and as much practice as possible is given to facilitate the application of these sciences to professional work.

ELECTRICAL ENGINEERING.

Electrical Engineering has to do with the design and construction of electrical machinery and the various applications of electricity to the arts. Electrical and Mechanical Engineering are so closely interrelated that the first three years are the same, and it is only the Senior courses, such as Telephony and pure Electrical design, that are differentiated from the Mechanical Engineering courses.

MECHANICAL ENGINEERING.

Mechanical Engineering may be divided into three closely related lines, Design, Manufacturing and Power Generation. The courses in Design begin with mechanical drawing and continue with a study of mechanisms, strength of materials, stresses in, adaptability, cost, and commercial worth of machines.

Manufacturing has to do with the organization of commercial enterprises, systems of works, management, efficiency systems, cost of materials and power and layout of machinery in a factory for maximum output. The subject of Power Generation is covered by courses on steam and gas engines, turbines, boilers, water motors and electric generators, together with the proper operation of all classes of machinery and the application of power thereto.

REQUIREMENTS FOR GRADUATION.

CREDITS.

In all of the groups of the College of Engineering, 176 credits are required for graduation. A credit is given for each one-hour recitation, or lecture, (requiring one hour preparation) per week, carried satisfactorily for one semester, or for two hours per week, spent in a laboratory, drawing room or shop, one semester.

REQUIRED SUBJECTS.

The subjects required for graduation are given under appropriate headings on the following pages.

GRADES.

Semester grades are expressed on a basis of 100 for perfect work.

70 is required for passing.
60-70 indicates a condition.
Below 60 indicates a failure.

A student making 70 or more in any course is given the credits for that course. If he makes from 60 to 70 he must pass a satisfactory examination at the time set for condition examinations or receive a failure in the subject.

If the condition is received in a laboratory course, the student must make up the work in which he is deficient before the time of the condition examinations, or receive a failure.

A failure in a subject means that the student must repeat the subject in class the next time it is given.

Students, who, on account of ill-health or other cause, are not able to carry 22 credits a semester, will be allowed to carry a lighter course, which will allow them to graduate in five years.

OUTLINE OF COURSES

FRESHMAN YEAR OF ALL FOUR YEAR COURSES.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
College Algebra, Eng. Math. (1)	3		3
Trigonometry, Eng. Math. (2)	2		2
Chemistry, Chem. (1)	3	4	5
Mechanical Drawing, M. E. (1)		6	3
English, Eng. (1)	3		3
French, German or Spanish, M. Lang. (1), (3) or (5)	4		4
Review of Engineering Industries, M. E. (9)	2		2

Second Semester.

	Rec.	Lab.	Credits.
Analytic Geometry, Eng. Math.—(3)	5		5
Chemistry, Chem. (2)	3	4	5
Descriptive Geometry, M. E. (2)	1	4	3
English, Eng. (2)	3		3
French, German or Spanish, M. Lang. (2), (4) or (6)	4		4
Review of Engineering Industries, M. E. (9a.)	2		2

ARCHITECTURE.

SOPHOMORE YEAR.

First Semester.

	Rec.	Lab.	Credits.
Strength of materials, Arch. (14)	4		4
Physics, Phy. (1)	3	4	5

	Hours Attendance		
	Rec.	Lab.	Credits.
English, Eng. (3)	3		3
Freehand Drawing, Arch. (16)		4	2
Construction, Arch. (20)	2		2
Descriptive Geometry, Arch. (1)		4	2
Design, Arch. (3)		4	2

Second Semester.

	Rec.	Lab.	Credits.
Strength of Materials, Arch. (15)	4		4
Physics, Physics (2)	3	4	5
English, Eng. (4)	3		3
Freehand Drawing, Arch. (9)		4	2
History of Architecture, Arch. (17)	2		2
Construction, Arch. (2)	2		2
Descriptive Geometry, Arch. (2)		4	2
Design, Arch (4)		4	2

JUNIOR YEAR.

First Semester.

	Rec.	Lab.	Credits.
History of Architecture, Arch (18)	2		2
Freehand Drawing, Arch. (10)	4	4	2
Heating and Ventilating, M. E. (25)	2		2
Pictorial Drawing, Arch. (24)	1	4	3
Construction, Arch. (22)	3		3
Design, Arch. (5)		12	6
Philosophy, Phil. (1)	4		4

Second Semester.

	Rec.	Lab.	Credits.
History of Architecture, Arch. (19)	2		2
Heating and Ventilating, M. E. (26)	2		2
Freehand Drawing, Arch (11)		4	2

	Hours Attendance		
	Rec.	Lab.	Credits.
Pictorial Drawing, Arch. (25)	1	4	3
Construction, Arch. (23)	3		3
Design, Arch. (6)		12	6
Philosophy, Phil. (2)	4		4

SENIOR YEAR.

First Semester.

Freehand Drawing, Arch. (12)		4	2
Sanitation, Arch (26)	2		2
Steel and Fireproof Details, Arch. (27)	2		2
Reinforced Concrete, C. E. (27)	2	2	3
Interior Decoration, Arch. (28)	2		2
Design, Arch (7)		8	4
Philosophy, Phil. (3)	3		3
Elective			4

Second Semester.

Freehand Drawing, Arch (13)		4	2
Business Law, Law (1)	1		1
Political Economy, Pol. Econ. (1)	2		2
Thesis, Arch. Thesis			8
Contracts and Specifications, C. E. (31)	2		2
Philosophy, Phil. (4)	3		3
Elective			4

ARCHITECTURAL ENGINEERING.

SOPHOMORE YEAR.

First Semester.

Calculus, Eng. Math. (4)	5		5
Analytic Mechanics, C. E. (7)	3		3
Physics, Physics (1)	3	4	5

	Hours Attendance		
	Rec.	Lab.	Credits.
English, Eng. (3)	3		3
Construction, Arch (20)	2		2
Descriptive Geometry, Arch. (1)		4	2
Design, Arch. (3)		4	2

Second Semester.

Calculus, Eng. Math. (5)	5		5
Analytic Mechanics, C. E. (8)	3		3
Physics, Phy. (2)	3	4	5
English, Eng. (4)	3		3
Construction, Arch. (21)	2		2
Descriptive Geometry, Arch. (2)		4	2
Design, Arch (4)		4	2

JUNIOR YEAR.

First Semester.

Mechanics of Materials, C. E. (9) and (11)	3	4	5
Masonry, C. E. (20)	4		4
Graphic Statics., C. E. (18)	3		3
Structural Design, C. E. (14)		4	2
Architectural Design, Arch (5)		8	4
Philosophy, Phil. (4)	4		4

Second Semester.

Graphic, Statics., C .E. (19)	3		3
Structural Design, C. E. (15)		4	2
Pictorial Drawing, Arch. (24)	1	4	3
Architectural Design, Arch. (6)		12	6
Philosophy, Phil. (2)	4		4
Elective			4

SENIOR YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Trusses, C. E. (22)	4		4
Concrete, C. E. (27)	2	2	3
History of Architecture, Arch. (16)	2		2
Heating and Ventilation, M. E. (25)	2		2
Sanitation, Arch. (26)	2		2
Interior Decoration, Arch. (28)	2		2
Design, Arch. (7)		8	4
Philosophy, Phil. (3)	3		3

Second Semester.

	Rec.	Lab.	Credits.
History of Architecture, Arch. (17)	2		2
Business Law, Law (1)	1		1
Political Economy, Pol. Econ. (1)	2		2
Contracts and Specifications, C. E. (31)	2		2
Thesis, Arch. Thesis			6
Philosophy, Phil. (4)	3		3
Elective			7

CIVIL ENGINEERING.

SOPHOMORE YEAR.

First Semester.

	Rec.	Lab.	Credits.
Calculus, Eng. Math. (4)	5		5
Analytic Mechanics, C. E. (7)	3		3
Physics, Phy. (1)	3	4	5
Geology, Geol. (1)	2		2
Surveying, C. E. (1)	1	2	2
Drawing, C. E. (12)		4	2
English, Eng. (3)	3		3

	Hours Attendance		
	Rec.	Lab.	Credits.
Calculus, Eng. Math. (5)	5		5
Analytic Mechanics, C. E. (8)	3		3
Physics, Phy. (2)	3	4	5
Mineralogy, Geol. (2)	2		2
Surveying, C. E. (2)	1	4	3
English, Eng. (3)	3		3
Drawing, C. E. (13)		2	1

JUNIOR YEAR.

First Semester.

Mechanics of Materials, C. E. (9)	3		3
Masonry, C. E. (20)	4		4
Graphics, C. E. (18)	3		3
Differential Equations, Eng. Math (6)	2		2
Field Engineering, C. E. (3)	1	4	3
Structural Design, C. E. (14)		4	2
Materials Testing Laboratory, C. E. (10)		2	1
Philosophy, Phil. (1)	4		4

Second Semester.

Hydraulics, C. E. (21)	3	2	4
Electricity, E. E. (14)	2	2	3
Graphics, C. E. (19)	3		3
Method of Least Squares, Eng Math. (7)	2		2
Field Engineering, C. E. (4)	2	4	4
Structural Design, C. E. (15)		4	2
Philosophy, Phil. (2)	4		4

SENIOR YEAR.

First Semester.

	Hours Attendance		
	Rec.	Lab.	Credits.
Roofs, Bridges and Other Trusses, C. E. (22)	4		4
Roads and Pavements, C. E. (24)	2		2
Sewers and Sanitation, C. E. (25)	2		2
Geodesy and Astronomy, C. E. (26)		2	1
Concrete and Reinforced Concrete, C. E. (27)	2	2	3
Engineering in Field, C. E. (5)		6	3
Design, C. E. (16)		4	2
Tunneling , C. E. (28)	2		2
Philosophy, Phil. (3)	3		3

Second Semester.

	Rec.	Lab.	Credits.
Roofs, Bridges and Other Trusses, C. E. (23)	4		4
Political Economy, Pol. Econ. (1)	2		2
Irrigation, C. E. (29)	2		2
Railway Construction, C. E. (30)	2		2
Estimates and Specifications, C. E. (31)	2		2
Engineering in Field, C. E. (6)		4	2
Thesis, C. E. (17)			3
Business Law, Law (1)	2		2
Philosophy, Phil. (4)	3		3

Note. A month of practical field-work under actual conditions at the University farm at Loyola, in the foot-hills of Santa Clara County, is required during the vacation at the close of the Junior and of the Senior year. See Announcement on page 63.

The credits of the Junior and Senior years are not complete without these courses, unless the student has had the equivalent in actual practice in civil engineering.

ELECTRICAL AND MECHANICAL ENGINEERING.

SOPHOMORE YEAR.

First Semester.

	Hours Attendance Rec.	Hours Attendance Lab.	Credits.
Calculus, Eng. Math. (4)	5		5
Analytic Mechanics, C. E. (7)	3		3
Physics, Physics (1)	3	4	5
Kinematics, M. E. (3)	2		2
English, Eng. (3)	3		3
M. E. Laboratory, M. E. (15)		4	2
Shopwork, M. E. (10)		4	2

Second Semester.

	Rec.	Lab.	Credits.
Calculus, Eng. Math. (5)	5		5
Analytic Mechanics, C. E. (8)	3		3
Physics, Physics (2)	3	4	5
Drawing, M. E. (4)	1	4	3
English, Eng. (4)	3		3
Shopwork, M. E. (11)		6	3

JUNIOR YEAR.

First Semester.

	Rec.	Lab.	Credits.
Mechanics of Materials, C. E. (9)	3		3
Machine Design, M. E. (5)		4	2
Boilers, M. E. (18)	2		2
Electrical Measurements, Physics (3)	2		2
Electric Machinery, E. E. (1)	3		3
E. E. Laboratory, E. E. (9)		4	2
Materials Testing Laboratory, C. E. (11)		4	2
Shopwork, M. E. (12)		4	2
Philosophy, Phil. (1)	4		4

Second Semester.

	Hours Attendance		
	Rec.	Lab.	Credits.
Hydraulics, C. E. (21)	3	2	4
A. C. Machinery, E. E. (2)	3		3
Steam Machinery, M. E. (19)	3		3
Machine Design, M. E. (6)		4	2
E. E. Laboratory, E. E. (10)		6	3
Shopwork, M. E. (13)		4	2
Philosophy, Phil. (2)	4		4
Surveying, C. E. (32)		2	1

ELECTRICAL ENGINEERING.
SENIOR YEAR.

First Semester.

Thermodynamics, M. E. (20)	4		4
Internal Combustion Engines, M. E. (21)	3		3
Electrical Design, E. E. (6)		6	3
Alternating Currents, E. E. (3)	2	4	4
Telephony, E. E. (4)	2		2
E. E. Laboratory, E. E. (11)		6	3
Philosophy, Phil. (3)	3		3

Second Semester.

Power Plant Design, E. E. (7)	1	4	3
Electric Railways, E. E. (5)	2		2
Electrical Design, E. E. (8)		4	2
E. E. Laboratory, E. E. (12)		4	2
Contracts and Specifications, C. E. (31)	2		2
Political Economy, Pol. Econ. (1)	2		2
Business Law, Law (1)	1		1

	Hours Attendance		
	Rec.	Lab.	Credits.
Technical Literature, E. E. (13)	1		1
Thesis, E. E. Thesis			4
Philosophy, Phil. (4)	3		3

MECHANICAL ENGINEERING.

SENIOR YEAR.

First Semester.

Thermodynamics, M. E. (20)	4		4
Internal Combustion Engines, M. E. (21)	3		3
Industrial Engineering, M. E. (23)	3		3
Machine Design, M .E. (7)		4	2
Graphics, C. E. (18)	3		3
M. E. Laboratory, M. E. (16)		4	2
Shopwork, M. E. (14)		4	2
Philosophy, Phil. (3)	3		3

Second Semester.

Technical Literature, M. E. (27)	1		1
Power Plant Design, M. E. (8)	1	2	2
Industrial Engineering, M. E. (24)	3		3
Hydraulic Motors, M. E. (22)	2		2
M. E. Laboratory, M. E. (17)		4	2
Business Law, Law (1)	1		1
Contracts and Specifications, C. E. (31)	2		2
Political Economy, Pol. Econ. (1)	2		2
Thesis, M. E. Thesis			4
Philosophy, Phil. (4)	3		3

ARCHITECTURE.

(1) Descriptive Geometry.

Two Credits. **Four Hours, Drawing.**
First Semester.

Problems in point, line, plane, curved surfaces and double curved surfaces of revolution. Intersection of planes and solids. Development of solids. Plane surface solids. Intersection of solids. Perspective. Shades and shadows. Isometric projections. Applications, Prerequisite, M. E. (2).

(2) Descriptive Geometry.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (1). Prerequisite, Arch. (1)

(3) Design.

Two Credits. **Four Hours, Drawing.**
First Semester.

The student is taught to draw with neatness and precision the various Orders. Free scope is given him to bring into play his designing ability. This course is a preparation for general architectural composition and aims to bring out and direct along proper channels whatever ability in designing the student may have. At first simple problems are given but as the student's ability increases he is given more difficult problems.

(4) Design.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (3). Prerequisite, Arch (3).

(5) Design.

Six Credits. **Twelve Hours, Drawing.**
First Semester.

Continuation of (4). Prerequisite Arch. (4).

(6) Design.

Six Credits. **Twelve Hours, Drawing.**
Second Semester.

Continuation of (5). Prerequisite, Arch. (5).

(7) Design.

Four Credits. **Eight Hours, Drawing.**
First Semester.

Continuation of (6). Prerequisite Arch. (6).

(8) Freehand Drawing.

Two Credits. **Four Hours, Drawing.**
First Semester.

Drawings are made from casts and afterwards from life. In all drawings precision and neatness in freehand work is demanded.

(9) Freehand Drawing.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (8). Prerequisite Arch. (8).

(10) Freehand Drawing.

Two Credits. **Four Hours, Drawing.**
First Semester.

Continuation of (9). Prerequisite Arch. (9).

(11) Freehand Drawing.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (10). Prerequisite Arch. (10).

(12) Freehand Drawing.

Two Credits. **Four Hours, Drawing.**
First Semester.

Continuation of (11). Prerequisite Arch. (11).

(13) Freehand Drawing.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (12). Perequisite Arch. (12).

(14) Strength of Materials.

Four Credits. **Four Hours.**
First Semester.

This course covers the derivation and use of formulae in dimensioning architectural structures. Numerous problems are assigned to give the students speed and accuracy in the manipulation of formulae. The laws of stresses and deformations of materials are discussed and methods of determining the shearing forces and bending moments in beams are explained. This course is intended for those who are taking Architecture and have not enough mathematics to take the courses in Applied Mechanics.

(15) Strength of Materials.

Four Credits. **Four Hours.**
Second Semester.

Continuation of (14). Prerequisite Arch. (14).

(16) History of Architecture.

Two Credits. **Two Hours.**
First Semester.

Fully illustrated lectures and recitations are given on the Architectural history of different periods. The outlines of general history are studied in conjunction with the architecture of the times in order to enable the student to appreciate the relation of the people and their architecture. A careful study is made of the various examples of the great architectural styles of these times and also of painting and sculpture.

(17) History of Architecture.

Two Credits. **Two Hours.**
Second Semester.

Continuation of (16). Prerequisite Arch. (16).

(18) History of Architecture.

Two Credits. **Two Hours.**
First Semester.

Continuation of (17). Prerequisite Arch. (17).

(19) History of Architecture.

Two Credits. **Two Hours.**
Second Semester.

Continuation of (18). Prerequisite Arch (18).

(20) Construction.

Two Credits. **Four Hours.**
First Semester.

A course intended to give the student the fundamental notions. Foundations are studied and their adaptability to various soils. Manufacture of lime and cement; bricks and their manufacture; stone quarrying and dressing.

(21) Construction.

Two Credits. **Two Hours.**
Second Semester.

After the course in general construction, constructions in frame of wood, stone and brick are carefully studied.

(22) Construction.

Three Credits. **Three Hours.**
First Semester.

A course in steel and reinforced concrete construction.

(23) Construction.

Three Credits. **Three Hours.**
Second Semester.

Different varieties of stone and terra cotta, and their use in the various forms of architecture. General problems of construction with various stones.

(24) Pictorial Drawing.

Three Credits. **One Hour Lecture, Four Hours, Drawing.**
First Semester.

A study of isometric, oblique, axonometric, and perspective projection.

(25) Pictorial Drawing.

Three Credits. **One Hour Lecture, Four Hours, Drawing.**
Second Semester.

Continuation of (24). Prerequisite Arch. (24).

(26) Sanitation.

Two Credits. **Two Hours.**
First Semester.

The draining and sewage of buildings, traps and work. Use of plane table. Maps of work. Stadia. Transit stadia. City, mine, hydrographic and topographic surveying. Engineering office work. Plotting profiles and cross-sections. Calculation of areas. Computation of volumes of earth work and masonry. Draughting field notes. Excavation methods in different materials. Estimate of cost. Overhaul. Application to canals, trenches, embankments, dredging, etc. Practical surveying in the field under all the heads in the scope of the work in class. Notes. Calculations. Conditions made as nearly those of a corps in the field as possible, each student being required to fill every position in turn.

(4) Field Engineering.

Two Hours Lecture, Two Hours, Laboratory.
Four Credits. **Second Semester.**

Continuation of (3). Prerequisite C. E. (3).

(5) Engineering in Field.

Three Credits. **Six Hours, Laboratory.**
First Semester.

Reconnaissance. Location, preliminary survey and grade stakes for highways, canals and railways. Plots and calculations from notes. Theory of railway curves; simple, compound and taper curves. Locating sidetracks, switches, yards. Cross-sectioning. Triangulation. The work is made as nearly practical as possible and covers the theories and principles taught in class work. Prerequisite C. E. (4).

(6) Engineering in Field.

Two Credits. **Four Hours, Laboratory.**
Second Semester.

Continuation of (5). Prerequisite C. E. (5).

(7) Analytic Mechanics.

Three Credits. **Three Hours.**
First Semester.

General theories and principles concerning matter, inertia, space and time, motion, velocity and acceleration. Momentum. Force. Measures. Comparison and representation of force. Statics: Composition and resolution of concurring forces. Conditions of equilibrium. Composition and resolution of forces acting on a rigid body. Center of gravity. Friction. Virtual velocities. Machines. Funicular polygon. Attractions. Rectiliniar and curviliniar motion. Kinetics: laws of motion. Motion under the action of a variable force; and in a resisting medium. Central forces. Constrained motion. Impact. Work and energy. Moments of inertia. Rotary motion. Motion of a system of rigid bodies in space.

Effort is made throughout the course to direct the attention of the student to practical application of mathematical deductions. Prerequisites Eng. Math. (3) and taking Physics (1).

(8) Analytic Mechanics.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (7). Prerequisite C. E. (7).

(9) Mechanics of Materials.

Three Credits. **Three Hours.**
First Semester

Resistance and elasticity of materials. Pipes, cylinders and riveted joints. Simple and cantilever beams. Restrained and continuous beams. Columns, shafts and girders and designing same. Torsion in shafts. Combined stresses. Strength and resilience of materials. Tension and compression. Flexure of beams. Shear and torsion. Apparent and true stresses. Plates, spheres and columns. Analytical and graphical methods used in the solution of problems. Prerequisites Eng. Math. (5) and C. E. (8).

(10) Materials Testing Laboratory.

One Credit. **Two Hours, Laboratory.**
First Semester.

Tests of iron, steel, wood and concrete in tension, compression, shear, bending and torsion. Rattler tests on brick and standard tests on road materials.

Prerequisite—must be taking C. E. (9).

(11) Materials Testing Laboratory.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Same as C. E. (10) only more complete. Especially for students in Architecture, Architectural Engineering, Electrical Engineering and Mechanical Engineering. Prerequisite—must be taking C. E. (9).

(12) Drawing.

Two Credits. **Four Hours, Drawing.**
First Semester.

Shading by lines and colors. Topographical drawing and lettering. Conventional signs, etc. Maps of work done in field. Completed maps in pencil, pen and colors. Blue prints. Prerequisite M. E. (1).

(13) Drawing.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (12). Prerequisite C. E. (12).

(14) Structural Design.

Two Credits. **Four Hours, Drawing.**
First Semester.

Mechanical drawing. Design and working drawing of machinery. Design and drawing of dams in earth, stone, wood, concrete and reinforced concrete. Piers, retaining walls and abutments in different materials. Design and drawings of concrete and reinforced concrete arches, culverts and bridges. Trestles and viaducts. Simple bridges. Problems under certain conditions are given students from which the design is to be evolved. Drawings giving in detail the structure of the design are required.

Prerequisite—must be taking C. E. (10).

(15) Structural Design.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Continuation of (14). Prerequisite C. E. (14).

(16) Design.

Two Credits. **Fours Hours Drawing.**
First Semester.

Analysis, design, estimate and drawings for a concrete or reinforced concrete dam, retaining wall, culvert or abutment. Same for a reinforced concrete bridge, either of solid arch, rib arch, girder or slab construction. Analysis, design and drawings for a trussed bent or tower in wood or steel. Analysis, design and drawings for a steel truss highway or railway bridge. In connection with this course, the student will be kept in touch with the latest methods and details of construction.

Prerequisite C. E. (15).

(17) Thesis.

Three Credits. **Six Hours.**
Second Semester.

Original investigation of some Engineering problem.

(18) Graphics.

Three Credits. **Three Hours.**
First Semester.

Principles and methods. Application to roof trusses under dead, snow and wind loads. Complete stresses for triangular and crescent trusses. Unsymmetrical loads and trusses. Bridge trusses. Stresses due to dead, snow, wind, initial tension and live loads. Bowstring trusses. Stress loads. Locomotive wheel loads. Plate girders. Shears. Moments. Trusses with broken chords. Miscellaneous trusses. Elastic deformation of trusses. Application to other engineering structures.

(19) Graphics.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (18). Prerequisite C. E. (18).

(20) Masonry.

Four Credits. **Four Hours.**

First Semester.

Study of materials, stone, brick, terra-cotta, limes, cements, sand, gravel and broken stone. Tests for each, especial attention being paid to limes and cements. Proportions and use of lime and cement mortars. Plain concrete; materials, proportions, forms for, making and placing, waterproofing, strength, weight and cost. Reinforced: beams, columns and slabs; reinforcement of each. Details of construction, including forms, placing reinforcement and concrete, removal of forms, expansion and contraction. Separately moulded members. Concrete building blocks and artificial stone. Stone cutting. Stone Masonry. Classification of stone masonry. General rules for laying. Concrete rubble. Cyclopean concrete. Strength. Brick Masonry. Strength. Construction. Waterproofing. Ordinary foundations. Bed of foundation. Designing footings. Preparing bed under different conditions. Pile foundations. Wood, concrete, reinforced concrete and steel piles. Pile driving. Bearing power. Arrangement of foundation. Foundations under water. Coffer-dam, crib and open-caisson process. Dredging through wells. Pneumatic process as used in buildings, rivers and subways. Freezing process. Masonry dams. Stability of gravity dams. Outlines of the design. Concrete and reinforced concrete dams. Liquid pressures. Causes of failure. Construction details of retaining walls. Theory of stability. Bridge abutments and piers. Culverts. Voussoir Arch. Stability of arches. Theory of arches and methods of failure. Elastic arch. Plain concrete fixed-end arches. Reinforced concrete hingeless arch. Hinged arch. Laboratory work in tests. Lectures giving further data, especially in reference to reinforced concrete and steel-concrete construction and reservoir dams.

(21) Hydraulics.

Three Hours Lecture, Two Hours, Laboratory.

Four Credits. **Second Semester.**

Fundamental data. Hydrostatics. Theoretical hydraulics. Instruments and observations, especially meters and pressure gauges. Flow through orifices. Flow over weirs. Flow through tubes and pipes. Flow in conduits. Flow of rivers. Water supply and water power. Dynamic pressure of water. Water wheels. Overshot, breast, undershot, vertical impulse, horizontal impulse and downward flow impulse wheels. Special forms of wheels. Turbines. Classification. Theory and design of turbines. Downward-flow and impulse turbines. Special devices. Naval hydro-mechanics. Pumps and pumping. Force and centrifugal pumps. Pumping engines. Other kinds of pumps. Pumping through pipes, and through hose. Hydraulic motors. Hydraulic-electric analogies. Stress is laid upon the effect of hydraulic laws upon engineering construction in or under water, especially in problems involving the impounding of water, or oil.

(22) Roof, Bridge and General Trusses.

Four Credits. **Four Hours.**

First Semester.

Analysis and deduction of stresses in members of roof trusses under different loads. Different types of highway and railway bridges under dead loads. Live loads. Final stresses in bridge trusses. Types of American bridge trusses. Bridge bracing, members and floors. Deflection and least work. Cantilever trusses and cranes. Swing bridges. Hinged trusses. Viaducts. Principles of economic design. Details and design of pin truss bridge. Highway bridges. Railroad riveted bridges.

(23) Roof, Bridge and General Trusses.

Four Credits. **Four Hours.**
Second Semester.

Continuation of (22) Prerequisite C. E. (22).

(24) Roads and Pavements.

Two Credits. **Two Hours.**
First Semester.

Different types of highways. Economic location of highways. Traction resistances. Gradients. Foundations. Preparing foundations. Drainage. Standard cross-sections. Natural, broken stone and other artificial roads. Materials and their adaptability to classes of traffic. Road coverings. Asphalts. Asphaltines and patented road coverings. Oils. Oiled roads. Dust prevention. Maintenance and repairs. Pavements. Paving materials. City streets. Width and cross-section, crown, gutters, curbs, footwalks and crossings. Street intersection and grades. Standard city street and street railway construction. Repairs. Lectures on improvement and changes in highway construction.

(25) Sewers and Sanitation.

Two Credits. **Two Hours.**
First Semester.

Principles of design. Types. Systems and general use. Standard sewer construction in different forms and materials. Standard and power systems. Sanitary problems involved. Methods of disposition of sewage. Garbage removal and disposition. Cost estimates. Design. Lectures on problems involved.

(26) Geodesy and Astronomy.

One Credit. **Two Hours, Laboratory.**
First Semester.

Class, field and observatory work. Methods of field work to obtain accurate results. Construction, use and correction of errors in instruments. Observatory determination of latitude, longitude, azimuth and time. Field work in determining parallels and meridians. Latitude and azimuth. Transit, altazimuth and sextant and their uses. Solar transit. Triangulations and adjustments. Compass variations. Especial attention directed to use and correction of engineering instruments and their adaptability to astronomical uses.

(27) Concrete and Reinforced Concrete.

Two Hours Lecture, Two Hours, Laboratory.
Three Credits. **First Semester.**

Lecture course supplemented by practical problems. Economic use and properties of concrete, reinforced concrete and steel concrete. Beams and theories of flexure. Columns. Retaining walls, drains, tanks, conduits and chimneys. Tests and desgin of arches.

Materials and methods of construction in foundations, buildings, bridges and conduit work. Facing and finishing. Forms. Falsework. Reinforcement; apportioning in girders, beams, columns and slabs. Systems of reinforcement. Placing reinforcement. Waterproofing. The object is to make the student familiar with the details of this modern construction.

(28) Tunneling.

Two Credits. **Two Hours.**
First Semester.

Classification of tunnels. Locating tunnels. Economic location. Different methods employed in tunnels under various soil conditions. Excavating. Removal of excavations. Blasting. Powders. Drills and machinery used. Economic distribution of forces. Heading and bench. Linings in wood, brick, concrete and reinforced concrete. Drainage. Ventilation. Rapid transit system. City subway work and methods.

(29) Irrigation.

Two Credits. **Two Hours.**
Second Semester.

Irrigation in general. Value, cost and returns. Drainage areas. Estimation of rainfall and discharge from drainage areas. Water units and duty. Streams, flow and discharge. Measuring devices. Canals and ditches; construction, alignment, slope and cross-section. Distribution. Application of water in irrigation. Storage work. Water supply and losses. Geological conditions affecting reservoir sites. Earth and masonary dams. Details of headworks, diversion weirs, waste ways, sluices and regulators. Pumping machinery. Maintenance. Water rights. Irrigation laws.

(30) Railway Construction.

Two Credits. **Two Hours.**
Second Semester.

Much of the course is also adapted to the construction of canals, highways, levees, etc. Reconnaissance. Location. Alignment, grade and distances. Parties. Staking out work. Grading. Organization of grading parties. Methods of grading. Machines, etc. Output of men, animals and machines. Volumes. Cut and fill. Overhaul. Finishing. Revetments. Drainage areas and waterways. Culverts, size and character. Tracklaying. Tracklaying machines. Surfacing. Ballast. Single and double track roads. Side tracks, switches, crossings and yards. Round houses. Shortening lines. Operating expenses. Maintenance. General and extra gangs. Camp hygiene. Right of way. This course is largely lecture work, using standard text-books and writings for reference.

(31) Estimates and Specifications.

Two Credits. **Two Hours.**
Second Semester.

Principally a lecture course, but supplemented by practical problems for which estimates and specifications must be submitted. Position of engineer in construction. Duties. Estimates. Corrections. Latitude allowed. Contracts. General kinds. Special. Specifications. Definiteness. Lectures on law of contracts.

(32) Surveying.

One Credit. **Two Hours, Laboratory.**
Second Semester.

Use and adjustment of tape, level and transit. For Electrical and Mechanical Engineers.

Announcement.

Beginning with the summer of 1914 the University Summer School of Field Work in Civil Engineering will be established in camp at Loyola, in the foothills of the Santa Cruz Mountains. This camp is so situated as to offer the student exceptionally ideal areas for field work in plain, foothill and mountain. The field work will be conducted by experienced field engineers, who will, in addition to the full technical course, give thorough instruction in practical camping, camp methods and camp hygiene. The course will be four weeks in length and will be obligatory upon both Junior and Senior Classes in Civil Engineering; each class being under separate instructors and doing individual work.

The course will embrace complete topographical surveys with different instruments, leveling, contouring, railway reconnaissance, preliminary and location survey, cross-sectioning, railway curves, highway surveys and location, maps and profiles, earthwork computation, estimates, watershed computation, irrigation problems and canal surveys, survey and estimate for dams, determination of latitude and longitude, triangulation, base line, geodetic survey of large extent of country, etc.

A full outline of each course and corresponding instructors, date of opening, expenses, etc., will appear in the Engineering Bulletin to be published in the spring of 1914.

ELECTRICAL ENGINEERING.

(1) Electrical Machinery.

Three Credits. **Three Hours.**
First Semester.

Magnetic field. Magneto-motive force. Hysteresis. Elementary dynamo. The magnetic circuit. Armature core. Commutator. Brush shifting. Sparking at brushes and remedies. Different types of generators. Methods of transmitting, distributing and controlling direct current. Direct current series and parallel systems. Feeders and mains. High tension D. C. systems.

(2) Alternating Current Machinery.

Three Credits. **Three Hours.**
Second Semester.

Self and mutual inductance. Capacity. Impedance. Phase angle and power factor. Series and repulsion types. Synchronous motors. Induction motors, single and polyphase. Methods of starting. Speed control. Electric drive for cranes, elevators, presses, pumps, fans, mill-work, etc. Prerequisites Physics (3) and E. E. (1).

(3) Alternating Currents.

Two Hours Lecture, Four Hours, Drawing.

Four Credits. **First Semester.**

Electric power systems. Translating, controlling and transmitting equipment. Constant potential and constant current transformers. Efficiency, regulation and protection. Polyphase systems of generation. Two phase and three phase and conversion from one system to another. Calculation of alternating current transmission lines. Regulation of voltage. Power factor of systems. Switch-boards. Apparatus used on switch-boards. Location. Types. Pole lines. Cable and conduit systems. Prerequisites E. E. (2).

(4) Telephony.

Two Credits. **Two Hours.**

First Semester.

The magneto-telephone. The microphone. Carbon transmitters. Induction coils. Call methods. Series and parallel circuits. Subscribers equipment. Line disturbances. Common battery systems. Exchange equipment. Party lines. Automatic systems. Combined telegraphy and telephony. Wireless telegraphy. Generation of electrical waves. Transmitting and receiving apparatus. Prerequisites Physics (2) and E. E. (1).

(5) Electric Railways.

Two Credits. **Two Hours.**

Second Semester.

Train resistance due to tracks and bearing surfaces, curves, grades and air. Acceleration and braking. Speed-time curves. Motors for railway work. Controllers. Distribution systems. Track construction. Bonding and electrolysis. Trucks, wheels and car bodies. Conduit, storage battery and third rail systems. Electric locomotives. Multiple unit control. Testing railway equipment. Financial considerations.

(6) Design of Direct Current Machinery.

Three Credits. **Six Hours, Drawing.**
First Semester.

Electrical and mechanical theory applied to the design of D. C. machinery. Switches, heaters, controllers, etc. Complete calculations and working drawings for a dynamo or motor, to fulfill given specifications. Prerequisite E. E. (1).

(7) Power Plant Design.

One Hour Lecture, Four Hours, Drawing.
Three Credits. **Second Semester.**

Design of a complete plant to furnish light for a city of a given size. Consideration of the elements: illumination, charges, operating expenses, income, organization and administration, reports, specifications, contracts and statistics. Prerequisites E. E. (3) and (6).

(8) Electrical Design.

Two Credits. **Four Hours, Drawing.**
Second Semester.

Design of alternators, transformers, induction motors and other alternating current apparatus. Thorough investigation and complete design of some unit assigned.

(9) Electrical Engineering Laboratory.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Determination of the resistance of electric circuits. Relation between speed, field strength and voltage. Operation of shunt series and compound wound generators. Distribution of potential around commutator. Heat runs to determine load capacity. Stray power. Starting boxes. Counter electric motive force. Shunt, series, compound and differentially wound motors. Operation of shunt and compound wound generators in parallel. Distribution of load. Constant potential and constant current generators. Control of series circuits. Regulation of arc lamps. Prerequisites—must be taking E. E. (1).

(10) Electric Engineering Laboratory.

Three Credits **Six Hours, Laboratory.**
Second Semester.

Calibration of ammeters and voltmeters. Calibration and adjustment of A. C. and D. C. watt-hour meters. Determination of resistances. Measurement of inductance and capacity. Permeability of samples of iron and steel. Determination of hysteresis. Storage batteries. Testing. Candle-power of lamps from standard candle. Cable testing. Insulation resistance. Practice in operation of A. C. motors, generators and other apparatus. Prerequisite E. E. (9.)

(11) Electrical Engineering Laboratory.

Three Credits. **Six Hours. Laboratory.**
First Semester.

Alternating current circuits. Inductance, capacity, impedance, phase, relation, true and apparent watts and power factor. Alternators. Magnetization curves. Losses and synchronous impedance. Synchronous motors. Methods of Synchronizing. Methods of starting rotary converters. Compounding. Calculation of efficiency. Alternators in parallel. Transformers. Regulation. Heating and efficiency. Use as induction regulators and phase changers. Wave shapes by instantaneous contact and by the oscillograph. Resonance. Methods of starting induction motors. Efficiency by brake tests. Operation of induction generator. Reports of complete tests on plants.

(12) Electrical Engineering Laboratory.

Two Credits. **Four Hours, Laboratory.**
Second Semester.

Continuation of (11). Prerequisite E. E. (11).

(13) Technical Literature.

One Credit. **One Hour.**
Second Semester.

Assigned readings and reports from current technical literature.

(14) Electricity.

Two Hours Lecture, Two Hours, Laboratory.
Three Credits. **Second Semester.**

A short course similar to E. E. (1) and E. E. (9) for Civil Engineering Students.

ENGINEERING MATHEMATICS.

(1) Algebra.

Three Credits. **Three Hours.**
First Semester.

Complete Algebra to include quadratic equations, then more particularly: ratio and proportion, progressions, imaginary and complex numbers, indeterminate equations, binomial theorem, variables and limits, inequalities, interpretation of results, logarithms, permutations and combinations, indetermined coefficients, determinants and graphic algebra.

(2) Trigonometry.

Two Credits. **Two Hours.**
First Semester.

Development of general formulae. Functions and their relations. Logarithms and their uses. Properties of triangles. Application of principles to practical problems in right and oblique triangles. Navigation in plane trigonometrical problems. Spherical trigonometry. Application to problems in astronomy and spherical mensuration.

(3) Analytic Geometry.

Five Credits. **Five Hours.**
Second Semester.

Loci. Lines. Circle. Different systems of coordinates. Conic sections. Supplementary propositions. Loci of second order. Plane curves of higher order. Solid analytical geometry, especially of surfaces of revolution. General equations. Prerequisites Eng. Math. (1) and (2).

(4) Calculus.

Five Credits. **Five Hours.**
First Semester.

Fundamental formulae and principles for differential and integral calculus. Maxima and minima. Curvature. Surfaces. Volumes. Indeterminate forms. Envelopes. Series. Expansion. Forms of intergration. Practical application. Prerequisite Eng. Math. (3).

(5) Calculus.

Five Credits. **Five Hours.**
Second Semester.

Continuation of (4). Prerequisite Eng. Math. (4).

(6) Differential Equations.

Two Credits. **Five Hours.**
Second Semester.

Analysis and deductions of formulae and equations used in physics, mechanics and engineering problems. Applications of formulae and equations given in engineering handbooks to problems. Practical problems and lectures. Prerequisite Eng. Math. (5).

(7) Method of Least Squares.

Two Credits. **Five Hours.**
Second Semester.

Study of principles and methods. Applications to solution of physical, astronomical, engineering and other problems. The student will be made familiar with this higher and more accurate method of solution of problems in his profession, especially triangulations.

This course does not occupy the whole time allotted in this semester, but the additional time will be devoted to structural design.

ENGLISH.

(1) Composition and Rhetoric.

Three Credits. **Three Hours.**
First Semester.

Lectures and recitations. The invention, arrangement, and presentation of material. The different species, historical, philosophical, scientific, critical, etc. masterpieces.

(2) Composition and Rhetoric.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (1). Prerequisite Eng. (1).

(3) Rhetoric and Literature.

Three Credits. **Three Hours.**
First Semester.

A course in English Rhetoric and Literature. Students who show any deficiency in English are required to take moreover the course in Special Composition. One hour a week is devoted to the study of Engineering Literature.

(4) Rhetoric and Literature.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (3). Prerequisite Eng. (3).

GEOLOGY.

(1) Geology.

Two Credits. **Two Hours.**

First Semester.

Brief Course in Mineralogy with access to a large and historical Geology. Particular attention is paid to structural Geology and the influences of Instructive and Engineering conditions. The student is made familiar with different stones by illustrating each recitation with specimens of the particular rocks treated, as well as their adaptability in construction, method of occurrence, etc.

(2) Mineralogy.

Two Credits. **Two Hours.**

Second Semester.

Brief Credits in Mineralogy with access to a large collection of specimens. Determination of unlabeled specimens. Crystallography. Blowpipe analysis. Includes a short course in Metallurgy. Iron ores and production of iron and steel. Percentage and effects of sulphur, silicon, manganese and carbon in iron and steel. Coals, Coke, Carbons and ash. Prerequisite Geology (1).

LAW.

(1) Business Law.

One Credit. **One Hour.**

Second Semester.

A brief course in Contracts, Sales, Negotiable Instruments, Real Estate, Partnership, Corporations and such other subjects as the professor may deem necessary or advisable.

MECHANICAL ENGINEERING.

(1) Mechanical Drawing.

Three Credits. **Six Hours, Drawing.**
First Semester.

Freehand lettering. Use of instruments. Plane problems. Freehand sketching. Orthographic, isometric and cabinet projections. Tracing and blue printing.

(2) Descriptive Geometry.

Three Credits. **One Hour Lecture, Four Hours, Drawing.**
Second Semester.

Orthographic projection of points, lines, planes, warped surfaces, etc., in the four angles of projection. Intersections. Tangents to curves and surfaces. Developments. Practical problems in stereotomy, surveying, architecture, belting layouts, etc. Prerequisites M. E. (1).

(3) Kinematics.

Two Credits. **Two Hours.**
First Semester.

Motion, velocity and acceleration of machine parts. Rolling cylinders and cones. Lobed wheels. Belts. Levers, cams. Linkwork. Gearing. Parallel and straight line motion. Intermittant linkwork. Aggregate combinations. Prerequisite M. E. (1).

(4) Machine Drawing.

One Hour Lecture, Four Hours, Drawing.
Three Credits. **Second Semester.**

Language of Mechanical Drawing. Conventional method of representing bolts, screws and other standards. Piping. Design and detailing simple parts to take tension, compression and shear. Study of different methods of drawing and dimensioning found on commercial working drawings. Accuracy, completeness and speed are required. Prerequisite M. E (3).

(5) Machine Design.

Two Credits. **Four Hours, Drawing.**
First Semester.

Selection of materials for machine parts. Proper working stresses for different materials under dead, repeated and reversed loads. Determination of nature and distribution of stresses in each element of a machine. Friction. Design of such elements as crank shafts, machine frames, connecting rods, etc., when subject to tension, compression, shear, torsion, bending or any combination of these. Figuring weight and cost of manufacture. The kinematic layout of a machine for functional operation. The evolution of a design from preliminary sketch to complete working and assembly drawings, involving a study of strength, adaptability, symmetry, ease of operation, depreciation and cost of manufacture. In all this work the note-book is as important as the drawings.

Prerequisite M. E. (4).

(6) Machine Design.

Three Credits. **Six Hours, Drawing.**
Second Semester.

Continuation of (5). Prerequisite M. E. (5).

(7) Machine Design.

Two Credits. **Four Hours, Drawing.**
First Semester.

Continuation of (6). Prerequisite M. E. (6).

(8) Power Plant Design.

Three Credits. **Two Hours.**
Second Semester.

Sites. Comparison of high-speed engines, Corliss engines, steam turbines and gas engines. Cost and adaptability of different types of steam boilers. Condensers. Economizers. Superheaters. Pumps. Stokers. Piping. Complete layout of a plant with specifications and advertisement for bids.

(9) Review of Engineering Industries.

Two Credits. **Two Hours.**
First Semester.

Lectures and assigned reading on Engineering studies and work. This course is designed to teach the student how to study and to enable him to make a rational choice of a course of study.

(9a.) Review of Engineering Industries.

Two Credits. **Two Hours.**
Second Semester.

Continuation of (9).

(10) Shopwork.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Use and care of saws, planes, square, etc. Layout of simple work from blue prints. Lathe tools and exercises in turning.

(11) Shopwork.

Three Credits. **Six Hours, Laboratory.**
Second Semester.

Patternmaking and foundry work. Use of shrink rule. Construction of typical solid, split and piece patterns and core boxes. Layouts from working drawings. Bench moulding. Dry sand, green sand and loam moulds. Swept work. Core making. Shop visits. Prerequisite M. E. (10).

(12) Shopwork.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Management of forge fire. Shaping. Drawing. Upsetting. Swaging. Welding. Tempering. Die forging. Working different grades of iron and steel.

(13) Shopwork.

Two Credits. **Four Hours, Laboratory.**
Second Semester.

Cold-chisel, file and scraper. Work on the lathe, planer, drill, shaper, milling machine and grinder. Assembling, erecting and rigging.

(14) Shopwork.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Continuation of (13). Prerequisite M. E. (13).

(15) Mechanical Engineering Laboratory.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Method of investigation. Classification of errors.

Accuracy of numerical calculations. Autographic diagrams. Callibration of pressure gauges, thermometers, pyrometers, indicator springs, tachometers, planimeters, weirs, nozzles, orifices, pitot tubes, Venturi meters and dynamometers. Testing of lubricants. Density, viscosity, gumming, fire-test and cold test. Measurement of power by the prony brake, Alden brake, traction dynamometers and transmission dynamometers. Belt testing. Measurement of flow of liquids and gases by means of meters, nozzles, pitot tubes, etc. Moisture in stream by barrel, Hoadley, Barrus, throttling, separating and chemical calorimeters. Heating value of coals determined by the bomb calorimeter. Heating value of gas by Junker's calorimeter. Flue gas analysis with Orsat's apparatus. Complete tests of steam engines, boilers, gas engines, injectors, pumps and entire plants. Standard reports,

(16) Mechanical Engineering Laboratory.

Two Credits. **Four Hours, Laboratory.**
First Semester.

Continuation of (15). Prerequisite (15).

(17) Mechanical Engineering Laboratory.

Two Credits. **Four Hours, Laboratory.**
Second Semester.

Continuation of (16). Prerequisite M. E. (16).

(18) Boilers.

Two Credits. **Two Hours.**
First Semester.

Heat; conduction, convection and radiation. Heat of evaporation. Combustion. Smoke Quantity of air required. Methods of firing. Classification of coals. Efficiency of combustion. Boiler horsepower. Types of boilers. Furnaces. Stokers. Draft. Boiler Scale. Water purification. Explosions. Testing. Care of Boilers. Prerequisite Physics (1).

(19) Steam Machinery.

Three Credits. **Three Hours.**
Second Semester.

Properties of steam. Slide-valve. Indicator. Simple and compound engines. High speed, Corliss and marine engines. Turbines. Steam pumps. Locomotives. Valve gears. Governors. Flywheels. Balancing. Steam engine performance. Prerequisite M. E. (18).

(20) Thermodynamics.

Four Credits. **Four Hours.**
First Semester.

Mechanical theory of heat. First and second laws of thermo-dynamics. Perfect gases. Saturated vapors. Superheated vapors. Hot air engine. Internal combustion engine cycles. Influence of engine cylinder walls. Friction of engines. Refrigerating machines. Injectors. Steam turbines. Prerequisite M. E. (19).

(21) Internal Combustion Engines.

Three Credits. **Three Hours**
First Semester.

The theory and design of gas, gasoline and oil engines, gas producer practice; the combustion of gaseous fuels. Prerequisite M. E. (20.)

(22) Hydraulic Motors.

Two Credits. **Two Hours.**
Second Semester.

Action of water on curved vanes. Forces developed and effect of impact. Work done. Centrifugal action. Reaction turbines. Vane form and arrangement. Axial, radial and mixed flow wheels. Losses due to friction, shock, leakage and residual velocity. Impulse turbines. Experiments with turbines of various types. Governors. Centrifugal pumps. Theory. Radial and curved vanes. Velocity of flow. Volute. Diffuser. Guide vanes in diffuser. Impeller passages. Balancing. Losses. Efficiency. Selection and arrangement of water-wheels. Governors and auxiliary apparatus. Relation between available water supply, possible output and perfection of development work. Draft tubes. Stop valves. Gates. Vacuum and pressure relief stand pipes. Analysis of typical installations. Water power costs.

Prerequisite C. E. (21).

(23) Industrial Engineering.

Three Credits. **Three Hours**
First Semester.

The economic element in shop processes. Conditions for most economic production. Functional operation of machine tools. Limits of economic production. Machines for performing specific operations. Time study. Labor saving devices in the shops. Distribution of cost of machine production between different processes, power, labor and material. Fixed charges. Layout of shops for most direct production. Layout of system of management and cost determining system. Prerequisite M. E. (13).

(24) Industrial Engineering.

Three Credits. **Three Hours**
Second Semester.

Continuation of (23). Prerequisite M. E. (23).

(25) Heating and Ventilation.

Two Credits. **Two Hours.**
First Semester.

Theory and Design the various systems for heating and ventilating buildings, including Hot Air, Hot Water, Steam and the plenum and vacuum systems, and central station heating.

(26) Heating and Ventilation.

Two Credits. **Two Hours.**
Second Semester.

Continuation from (25). Prerequisite M. E. (25).

(27) Technical Literature.

One Credit. **One Hour.**
Second Semester.

Readings and reports from current Engineering literature.

MODERN LANGUAGES.

(1) French.

Four Credits. **Four Hours.**
First Semester.

In this course the student is carefully drilled in elementary grammar up to the irregular verbs, attention also being given to acquiring a vocabulary of the more common words.

(2) French.

Four Credits. Four Hours.
Second Semester.

A continuation of the preceding course. Special attention is given to the more important irregular verbs, the memorizing of words, and translation of French into English and vice versa.

(3) German.

Four Credits. Four Hours.
First Semester.

Elements of German grammar. Drill in pronunciation. Vocabulary.

(4) German.

Four Credits. Four Hours.
Second Semester.

A continuation of Course 3. Syntax. Oral and written exercises. Reading from the more simple German prose.

(5) Spanish.

Four Credits. Four Hours.
First Semester.

Elements of Spanish grammar. Drill in pronunciation. Vocabulary. Translations.

(6) Spanish.

Four Credits. Four Hours.
Second Semester.

Continuation of (5).

PHILOSOPHY.

(1) Philosophy.

Four Credits. **Four Hours**
First Semester.

Lectures are given every week during both semesters of the Junior and Senior years on the various subjects treated in the more lengthy courses of the College of Philosophy and Letters.

(2) Philosophy.

Three Credits. **Three Hours**
Second Semester.

Continuation of (1).

(3) Philosophy.

Three Credits. **Three Hours**
First Semester.

Continuation of (2).

(4) Philosophy.

Three Credits. **Three Hours**
Second Semester.

Continuation of (3).

PHYSICS.

(1) Mechanics, Molecular Physics, Sound.

Three Hours Lecture, Four Hours, Laboratory.
Five Credits. **First Semester.**

General principles of matter. General properties of Bodies. Equilibrium. Gravity. The balance. Laws of falling bodies. Pendulum. Properties peculiar to Solids. Hydrostatics. Capillarity, endosmose, diffusion, absorption. Hydro-dynamics. The properties of gases. Barometers. Measurement of the elastic force of gases. Aerodynamics. Production, propagation and reflection of sound. Measurement of the number of vibrations. The physical theory of music. Prerequisite—must be taking Eng. Math. (4).

(2) Light, Heat, Electricity.

Three Hours Lecture, Four Hours, Drawing.

Five Credits. **Second Semester.**

Transmission, velocity, intensity and reflection of light. Mirrors. Single refraction. Lenses. Dispersion and achromatism. Optical instruments. The eye. Sources of light. Phosphorescence. Double refraction. Interference and polarization. Properties of magnetism. Methods of magnetism. Laws of magnetic action. Terrestrial magnetism. Fundamental principles of frictional electricity. Quantitative laws of electric action. Distribution. Electrostatic induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electromagnetic induction. Passage of electricity through gases. Magneto and dynamo electric machines. Diamagnetism. Connection between electricity and light. Physiological action of the current. Animal electricity. Prerequisite Phy. (1).

(3) Electrical Measurements.

Two Credits. **Two Hours.**

First Semester.

Elementary electro-statics. Electrification by friction, conduction and induction. Magnetism. Determination of horizontal force and magnetic moment. Fundamental experiments in Volatic electricity. The galvanoscope and the galvanometer. Determination of E. M. F. Wheatstone's bridge. Callibration of galvanoscope. Measurements of resistance. The high resistance differential astatic galvanometer. Measurement of galvanometer resistance. Thomson's method. Differential method. Use of slide meter bridge. Carey Foster's method. Measurement of very low resistances. The method of comparison of potentials, projection of equal potentials and auxiliary conductors. Measurement of high resistances. The direct deflection method. Electrolyte resistance. Electrolytic resistance by alternating currents. The tangent galvanometer. Use of the standard galvonometer and the determination of E. M. F. Application of Joule's law. Use of potential galvenometer. Determination of the magnetic elements. Electro-magnetism and electro-magnetic induction. Action of linear current on magnet. Biot and Savart's law. Proof of electro-magnetic laws. Magnetic action of a solenoid. Laws of the electro-magnet. Induction experiments. Induction balance of Hughes. Damping. Comparison of resistance by magneto conductor. Use of earth inductor. Study of magnetic distribution. The condenser. Determination of the absolute capacity of a condenser. Electrometers. Prerequisite Phys. (2).

POLITICAL ECONOMY.

(1) Political Economy.

Two Credits. **Two Hours.**

Second Semester.

Object. Production, distribution, circulation and consumption of wealth. Production of wealth. Earth and natural agents. Labor and industry. Capital. Distribution of wealth. Individual property. Share of laborers. Circulation of wealth. Exchange. Taxes. Applications. This course is designed to give the student a broader view of his standing as a professional man in the community.

INSTITUTE OF LAW

Admission to Bar.

It is provided for by amended Section 280b of the Code of Civil Procedure that

Any person producing evidence of having satisfactorily completed the three years' course of law study prescribed by the department of law of THE INSTITUTE OF LAW OF THE UNIVERSITY OF SANTA CLARA, shall be entitled to a license to practise law in all the courts of this state, subject to the right of the chief justice of the Supreme Court of the state to order an examination, as in ordinary cases of applicants without such diploma or other evidence.

GRADUATION.

The degree of Bachelor of Laws is conferred on students who have completed the regular course of the Institute of Law. This implies:

1. Credit for at least eighty-four credit hours (a credit is the equivalent of one hour a week for one semester). No one is allowed a credit in any course at which he has not been present ninety per cent of the class hours, and in which his average is not at least passing (seventy per cent.).

2. Residence of at least three years in a standard law school, one year of which must have been spent in this Institute of Law.

3. Students who in their studies have given evidence of unusual ability and who have completed the course with distinguished success will be recommended for the degree with honor (cum laude).

4. Special students who have presented only the general University entrance credits and who by special action of the Faculty have been admitted to the Institute of Law, may, on the completion of the course, be recommended for the degree, provided they have given evidence of exceptional ability and attained an average of eighty per cent.

THE COURSE OF STUDIES IN DETAIL

ELEMENTARY LAW

Constitutional Law, General Law and Equity.

POLITICAL CORPORATIONS

The state, the county, the township, the school, sanitary, or other district; Relation of political subdivisions; Nature, power and functions of these political entities.

MUNICIPAL CORPORATIONS

Nature; Capacity; Functions; Government; Police power; Constitutional limitations; Government by commission; Creation; Dissolution; Power and method of contracting debts; Power over streets, parks and buildings; Limitation of power; Specific performance; Injunction; Power of taxation; Limit of indebtedness; Liability for torts; Estoppel; Street improvements, etc.

PRIVATE CORPORATIONS

Formation of; By-laws; Rights and liabilities of; Stockholders; Power of directors; Contracts express and implied; Liability for torts; What stock is; Transfer, assessments; Sale; Ultra Vires; Remedies of creditors; Purchase of its own stock; Dissolution, etc.

THE CONSTITUTION AND. STATUTES OF THE UNITED STATES

A nation not a federation; The relation of the nation to the states; Limitations of federal power; Limitations of state authority; The departments of the federal government; The legislative department; The judicial department; The excutive department; The sphere of each; Actions of which the federal courts have exclusive cognizance; Vested rights; removal of causes; Writs of error and review; Proceedings in bankruptcy and in admiralty; The process of law; Ex post facto and retroactive laws, etc.

PUBLIC INTERNATIONAL LAW OR THE LAW OF NATIONS

Treaties; Comity of nations; Extradition between nations, etc.

PRIVATE INTERNATIONAL LAW OR INTER-STATE LAW

Comity of states; Extradition between states; Conflict of dcisions, etc.

THE CONSTITUTION OF THE STATE

Powers and limitations of the legislative department; Powers and limitations of the judicial department; Powers and limitations of the executive department; The bill of rights; Protection to personal liberty from unlawful restraint or interference; Protection of liberty of speech, of the press and of worship; Protection to personal security; Protection of life and person from violence and injury; Protection of life and health from adverse conditions; Protection of reputation from defamation and slander; Protection to the right of acquiring, holding and enjoying property.

These constitutional rights lead us to the consideration of crimes, torts and property.

CRIMES

Intent; Coercion; Accident; Self-defence; Competency; Provocation; Principal and accessory; Agency; Venue; Juries; Preliminary examinations; Confessions; Dying declarations; The various crimes and their elements; Criminal procedure, etc.

TORTS

A tort may be a crime. It is a presumptively injurious invasion of the personal rights or property rights of others, from which a liability in damage results. This subject covers a very wide field and embraces a large number of highly important topics. The general view; Elements of illegal wrong; Malicious injury; Grounds of liability; Immunity of judicial and executive officers; The state can do no wrong; Inevitable accident; Damnum absque injuria; Injury coming from exercise of a right; Special topics; Damages; Measure of; Nominal, actual and punitive; Negligence; Contributory negligence; Carriers; Of persons and of property; Libel and slander; Nuisance; Malicious prosecution; Fraud and deceit; Trespass; Strikes and lockouts; Monopolies; Unfair competition, etc.

The constitutional right to acquire, hold and enjoy property brings us to the subjects of real and personal property.

REAL PROPERTY.

Acquisition. hypothecation and alienation; Ancient tenures; Fines and common recoveries; Dower and curtesy; The rule against perpetuities; Fee simple and fee simple absolute; The rule in Shellef's Case; When personalty becomes realty; Easements; Eminent domain; Incorporeal hereditaments; Money may be real property; Trespass quare clausum fregit; Fixtures, fructus naturales, etc.

PERSONAL PROPERTY

How distinguished from realty; How the same property may be both personalty and realty; Personalty as to a tenant; Realty as to an heir; Fructus Industriales; Occupancy; Conveyance; Gifts; Bequests; Estates in personalty; Deodands; Waifs; Treasure trove; Forfeiture; Escheat; Pledge; Mortgage; Bailment; Products of the mind; Patents, copyright, etc.

DOMESTIC RELATIONS

Husband and wife; Marriage and divorce; The law of the community; The unequal balance; If the wife dies, no probate; If the husband dies, probate; Necessity of increasing justice to women; Husband can devise his half; Wife has no similar right; Husband's control of the community; Wife's capacity to contract, etc.

PARENT AND CHILD

Obligation of parent to nurture, support and educate child; Obligation of child to support parent under certain circumstances; When others may supply food, clothing and shelter, and enforce payment, etc.

QUASI DOMESTIC RELATIONS

Guardian and ward; The powers, duties and liabilities of guardians; Under the eyes of the court; Accounts; Bonds; Managment of property; Compulsory reports, removal, etc.

EXECUTOR AND HEIR

The law of probate; Wills; Who may make; How to make; Nuncupative and holographic wills; Codicils; Limits of testamentary power; How for testator may relieve executor from judicial action; Effect of fraud, mistake, duress, or undue influence; Construction of wills; Advancements; Posthumous children; The law of succession; Administration; The right of appointment; The guidance and control of the court; The widow's support; Election to take by devise or take by law; Attempts to avoid probate when upheld; When defeated; Deeds in last illness; Rights of creditors; Collateral inheritance tax, etc.

TRUSTEE AND BENEFICIARY

Trusts, express, implied, resulting; Constructive; Charitable trusts; Trustes; Their power, duties and liabilities; Power of court over; Compelling bonds and accounts; Suspension, removal, etc.

CONTRACTS

Express; Implied; Written; Oral; Statute of frauds; Capacity of parties; Consideration; Legality; Offer; Acceptance; Withdrawal; Recision; Interpretation; Impossibility, when no excuse; Failure of consideration when immaterial; When inoperative for fraud, mistake, etc.

MASTER AND SERVANT

Their mutual relations; Liability of master for injury to servant; Assuption of hazard by servant; Status of servant's act under direct command; Injury of fellow servant; What acts do not bind master, etc.

PARTNERSHIP

How created; Development of the law; Status of partnership property; Rights, powers and liabilities of partners; Remedies of partner against copartner; Dissolution; Bankruptcy, etc.

BAILMENTS

Depositum; Mandatum; Commodatum; Pignus; Locatum; Innkeepers; Post office; Railroads; Express companies; Telegraph companies; Liabilities; Exonoration; Connecting lins; Stoppage in transitu; Measure of damages, etc

AGENCY

The appointment; Constructive agency; Ratification, express and implied; Delegation of authority; Respective duties and liabilities of principal and agent; When principal not bound by act of agent; End of relation; When principal bound thereafter by act of former agent, etc.

LANDLORD AND TENANT

The rights of the tenant; The rights of the landlord; The care of the property; Improvements; Waste; Ouster; Holding over; Unlawful detainer; Notice to quit; Fixtures, etc.

ATTORNEY AND CLIENT

The nature of the relation; Liability of attorney for negligence; The attorney's power to bind the client; The attorney's lien for fees; The privity of parties; No responsibility to outside parties, etc.

BILLS AND NOTES

Their legal requisites; When not negotiable; Endorsement; What releases endorsement; Considration; Rights of holders; Presentation; Acceptance; Dishonor; Transfer before maturity; After maturity; Bona fide purchasers for value, etc.

GUARANTY AND SURETYSHIP

Distinctions between guaranty and suretyship; Guaranty and endorsement; Guaranty and warranty; Guaranties of collection and payment; Continuing guaranties; Special guaranty; General guaranty; The contract; Consideration; Capacity of parties; Legality; Statute of frauds; Interpretation; Term of liability; Extent; Transfer; Rights of surety; Subrogation; Discharge, etc.

EQUITY

History of equity; Nature and limits; Maxims; Their efficiency in actual practice; Discovery; Specific performance; Equitable transformation; Notice and its results; Reformation and cancellation of instruments; Injunction; Prohibitory and manditory; Accounting; Partition; Marshalling of assets; Estates of infants, idiots and lunatics; Equitable estopal, etc.

EQUITY PLEADINGS

Bills; Pleas; Answers; Cross bills; Disclaimers; Motions; Decrees nisi; Masters; Receivers; Decretal orders; Examinations **de bene esse**; Interlocutory decrees; Final decrees; Caveats; Bills of review; Bills of revivor, etc

PLEADING AT COMMON LAW

The three kinds of action; Oral pleadings; Written pleadings; Declarations, demurrers, pleas, etc; The fictions of the law; The various forms of actions; The rules of pleading, etc.

PLEADINGS UNDER THE CODE

The principles of common law pleading preserved; But one form of action; No reply to answer; The essence of code pleading; Amendments to conform to the evidence at the trial, etc.

EVIDENCE

Res adjudicata; Burden of proof; Admissions; Presumptions; Judicial notice; Best evidence; Depositions; Real evidence; Expert evidence; Privileged communications of client to attorney; Patient to doctor; Layman to clergyman; Capacity to testify; Relevancy; Competency; Materiality; Evidential papers and records; Methods and limits of examination; Impeachment of witnesses; Contradiction of one's own witness; Objection to evidence; When too late; Protection of witness from insolence of attorney, etc.

THE PROGRESS OF A LAW SUIT

Filing the complaint; Issuance of summons; Service how made and by whom; Appearance of defendant; A general demurrer; A special demurrer; The process of service; On whom and how; The acknowledgement; The safest form; The hearing; Demurrer sustained; Time given to amend complaint; Notice to plaintiff when necessary and how given; Extension of time how secured; Demurrer overruled; Time given to answer; Notice to defendant; Answer; Demurrer to answer; General or special; Hearing demurrer sustained; Time given to amend answer; Extension of time by stipulation; By order of court; Limit of extensions by court; Motion to set cause for trial; What a motion is; How presented; Jury how demanded; Putting up fees; How Waived; Preparation for trial; Conferring with witnesses; Taking depositions; In the state; In another state or country; Refusal of witness to answer; Issuing subpoena's; Who may serve and how; Limit of subpoena's territory; Penalty for disobedience; Motion to postpone trial; How and when presented; Effect of negligence or undue delay in moving; What reasons sufficient; Affidavit of merits; Payment of costs as a condition.

THE TRIAL

Statement of the case; Drawing the panel; Oath to the talesmen; Examination of talesmen; Purpose and extent of it; Challenges; For cause; Peremptory; Swearing the jury to try the cause; The oath to the witness; Objection to testimony; Motion to strike out; Exception; How taken; Remedy when answer is too swift; When exception and motion come too late; Motion for a nonsuit; Motion to instruct jury to return a certain verdict; Instructions; Exceptions to instructions; Charging the jury; Swearing the baliff; Returning for further instructions; What may go to the jury room; Misconduct of jury and result;

The verdict; Its form; How presented and recorded; Polling the jury; Taxation of costs.

TRIAL BY THE COURT WITHOUT A JURY

Motion for new trial; Stay of execution; Notice of intention; Form and service; Statement or bill of exceptions; Hearing of motion, etc.

APPEAL

Notice and undertakings; Transcript on appeal; Briefs; Hearing; Petition for rehearing;; Costs; Remittitur; Execution; Notice of sale; Sale; Satisfaction of judgement.

THE PROCEDURE OF INJUNCTION

Attachments; Replevin; Review; Mandamus; Prohibition; Quo Warranto; Habeas Corpus; Election contests, etc., will be similarly made clear. This branch, the machinery of the law, like most of the other courses, is under the direction of à practical attorney of long and varied experience at the bar. It will be made a special feature of the institute.

THE METHOD OF INSTRUCTION

The method of instruction inevitably fixes the comparative value of the result. The student should solicitously seek the method which will best fit him for his practical work at the bar.

It is said that there are three systems now in vogue:

1. The Absolute Case System.
2. The Lecture System.
3. The Text Book System.

But a truer view perhaps is that there are but two systems:

1. A system by which the principles of the law are derived solely from the study and consideration of specific cases. This is the Absolute Case System;

2. A system by which the principles of the law are conveyed by means of treatises of eminent jurists or by means of lectures based in part upon the best treatises and also upon original research and personal experience. This system does not exclude the use of cases. It employs them, freely, but chiefly by way of illustration and to give the student practical aid in the intelligent handling of reports and the weighing of decisions.

The Case System was inaugurated by Harvard in 1871 and the same course is pursued also in the law schools of the following universities, namely: Wisconsin, New York, North Western, Illinois, Chicago, Fordham, Cornell, Minnesota, George Washington (D. C.), Iowa, Maine, Louisville, Nebraska, Missouri, Pennsylvania, California, Leland Stanford, Jr.; also in the Hastings Law School, in San Francisco, and probably many others not heard from. In the Northwestern University we are told that each instructor employs the case system "according to his own judgment, conducting the class by lectures, discussions, recitations, written exercises, or in any way he deems best adapted to the subject."

Even Harvard, as appears from the most recent circular of that university, does not assume that the student's sole source of legal knowledge is the case book or the professor's explanations thereof; but permits and doubtless expects him to illuminate the study of the case under consideration, by the reading of the best treatises on the subject.

The second or composite system seems to be growing rapidly in favor. It is used in the following universities and law schools: The National University, Michigan, Indiana, Georgia, Mercer, Kansas, Georgetown, Catholic University, The New York Law School, Tennessee, St. Louis, Chattanooga, Vanderbilt, Albany, Loyola, Southern California, Cumberland, Notre Dame, Montana, Boston, St. Paul, Pittsburg, Colorado, Colorado College, Mississippi, Virginia, Ohio, Washington University in St. Louis, and doubtless many others. The Cincinnati Law School is claimed as a case school but its latest catalogue contains, at page 225, a schedule of lectures covering every important topic of the law for the current school year. The New York Law School has issued a most convincing brief against the exclusive case system. The Southern Law schools in general maintain a high standard of merit and excellence. They are practically unanimous in the conclusion that it is impossible for an exclusive case system to produce a well equipped lawyer. They strongly favor the use of the ablest treatises, and surely it is not without reason that they urge that the master works of our Kents and Minors and Bishops and Wigmores, and their illustrious fellows, representing a life-time of specially skilled labor in the critical consideration and comparison of tens of thousands of cases, should not go unutilized in the preparation of young men for the bar.

The strongest objections to the absolute case system as the sole source of legal equipment seem to be deducible from the arguments of its advocates. A student of botany would surely be unwise not to avail himself of the storehouse of facts ready at hand, crammed with the results of the life-long observations of men peculiarly fitted for the work. A student of chemistry would seem to be a promising candidate for the Home for the Feeble Minded who instead of acquainting himself with the results of probably a hundred times as many experiments as his brief course of a few years would permit him to make in a university, should attempt in that inadequate period to reconstruct for himself the grand proportions of the temple of chemical knowledge. "Ah, but he will have aid." Then if he is to have aid, he should have the best aid and the most aid within his reach. He should possess himself of all the garnered knowledge of the science, the product, it may be, of the labors of a host of gifted men. And every step in it will but verify and illustrate a small part of what he already knows.

The medical student cannot master the science of medicine or even of surgery by mere attendance upon hospitals and could certainly never get a license to practise by that course alone. More than that, if he had first filled his mind with the medical learning of the books, the hospital experience itself would have infinitely more value and significance to him. The ordinary student of history cannot go to the sources. Such work should be done thoroughly or not at all and for him life is too short for that. Even the professional historian must restrict his researches to a small part of the entire field. Is it not the same with the law student? If he is going to the sources merely to gain practice in dealing with decisions, a moderate amount of such work only should be done or it will seriously interfere with the main purpose of his legal course, namely; the acquisition of legal knowledge. If on the other hand that is to be his sole source of learning, then he should not merely dip his fingertips into it. He should go into it exhaustively. If he is not in any way to have the benefit of the works of the approved legal authors either directly or through the medium of lectures, then what they all did collectively he must do singly, to reach the same results. But that is impossible, even though he gave his whole life to it. As an example let us consider Bishop on Contracts. Here in 600 pages, based upon nearly 11,000 cases, is presented the work of a legal genius, a man of fine, analytical, judicial mind, a skilled expert, *whose opinions are the most valuable part of the work.* Compare this master work with Huffcut and Woodruff's Cases on Contract, containing 267 cases and citing 500 cases. The cases are most wisely selected, but will any one seriously contend that any amount of familiarity with this case book will give the student the knowledge of contracts he could gain from Bishop or from lectures conveying the same matter? The case book should be regarded not as a rival or substitute, but as a supplement and an auxiliary to the treatise or lecture.

The professors of The Institute of Law, who are mostly men of long experience in the practice of law, are of one mind, namely: that a fair compliance with the rule of the Supreme Court of California, which requires a knowledge on the part of an applicant for a license of Blackstone, Kent, Greenleaf, Story, Gould, Lube, Parsons and Pomeroy, demands that the results of the labors of these great workers in the vineyard of the cases and of others such as they should be given to the student; they are of the opinion that the case book should be used solely to illustrate certain principles so acquired and to give experience in the critical examination of opinions, the recognition of dicta and the ascertainment of the exact value of decisions; that it lies in the realm of practice rather than of the acquirement of legal knowledge, and that legal knowledge should be gained connectedly and as a compact and symmetrical whole. Upon any one of the authors mentioned, a long list of important questions could be framed, the answers to which would be unknown to the student of the case book on that subject, because outside of his field of knowledge—outside of the inevitable limitations of the case book. For example, the most faithful and brilliant student of the case books of Fetter, and Huffcut and Woodruff, on Equity and Contracts respectively, could not hope to pass unscathed through a searching examination upon the text of Story on Equity Jurisprudence or of Parsons or Bishop on Contracts.

Moreover, a most important consideration is this, that the cases in the case books *were not decided for the instruction of students;* so a case containing a principle which lies at the threshold of a subject may also contain a principle which would come in the very last chapter of a treatise on that subject. Then, too, the diction of judges is intended for lawyers, not for students.

The strongest practical proof of the inadequacy of the exclusive case system is the constantly increasing amount of "piecing out" found in the case books of the most eminent editors, in a kind of desultory effort to fill up in some measure the obvious gaps left by the cases. What can all this result in, in effect, except an imperfect and disjointed treatise?

THE SPECIFIC PLAN ADOPTED.

Accordingly a portion of the time devoted to each subject is, at each session, given, first, to a lecture based upon and conveying in a manner suited to the purpose, the substance of the master commentators of the law upon the special topic being presented, supplemented, when necessary, by recent decisions, showing a change or further evolution of the law. Among the writers whose renown is as assured in law as that of Euclid in geometry, no one is always and continuously pre-eminent. "Quandoque bonus dormitat Homerus." An author may be unquestionably foremost in his general treatment of a subject and yet be less satisfactory than another at one point and than still another at a second point. One may be best in the statement of a principle and the conclusions which flow from it; another most useful in the illustrations given to support the principle. It is the lecturer's province therefore to give and elucidate the best that can be gathered from *all* the masters on the subject of the lecture.

A second portion of the time is given to a brief examination upon the previous lecture and occasionally a review of all the ground traversed. A third portion is devoted to giving out facts from actual cases to be solved at the next session of the class and to hearing the solution of similar legal problems given out at a prior session. This is found to awaken a lively interest, to engrave the remembrance of principles deeply on the mind, to correct mistaken notions of their meaning, and to test and develop the student's power of applying principles to concrete facts. The benefit from this is similar to that derived from working out by one's own efforts a problem in geometry, while the case book gives him problems fully worked out. Lastly comes the case book and the most zealous advocate of the exclusive case system would be surprised to note the ground traversed and the intelligent, excellent work which can be done in this line by students *so prepared for it.* A lot of cases is not given to the whole class. Each student is given usually but a single case each time for preparation. The result is that he has his case ready with such practical perfection that all his fellows are involuntarily interested in his statement of it, and so all have the full benefit of what every one has done, and at the same time a strong spirit of rivalry and emulation is excited. Moreover, the monotony, which results from having a number of students go over the same case in immediate succession, is by this method entirely eliminated. If a doubt arises as to the true purport of a case, the minds of the whole class are turned instantly to the solution of it. By this plan, while extracting from each case all that is of use in it, no difficulty is found in advancing as rapidly with the case book as the progress of the lectures makes advisable. Indeed the ground can be retraversed (the assignments being changed) until the class is familiar with all the cases, while still keeping pace with the lectures.

LAW COURSES FOR 1913-1914.

PRE-LEGAL COURSE.

	Hours 1st Semester.	Hours 2d Semester.	
Elementary Law	2	2	Robinson's Elementary Law, 2d Ed.

FIRST YEAR.

Agency		2	Huffcut's Cases.
Contracts	2	4	Huffcut & Woodruff's Cases.
Common Law Pleading	2	2	Keen's Cases.
Torts	2	2	Burdick's Cases.
Introduction to Property	4		Griffin's Cases on Personalty. Finch's Cases on Realty.
Criminal Law and Procedure	1½	1½	Chaplin's Cases.
Moot Court	1	1	
Private Reading Course	½	½	
Debating	1	1	
	14	14	

SECOND YEAR.

Common Law Pleading	2	2	Keen's Cases.
Introduction to Property.	4		Griffin's Cases on Personalty. Finch's Cases on Realty.
Bills and Notes	2	2	Smith & Moore's Cases.
Equity and Equity Pleading	1½	1½	Hutchins & Bunker's Cases on Equity. Lube on Equity Pleading.
Real Property		4	Finch's Cases.
Bailments and Carriers	2	2	Goddard's Cases.
Moot Court	1	1	

	Hours 1st Semester.	Hours 2d Semester.	
Private Reading Course	½	½	
Debating	1	1	
	14	14	

THIRD YEAR.

Mines and Irrigation		2	Text announced later.
Introduction to Property	4		Griffin's Cases on Personalty. Finch's Cases on Realty.
Bills and Notes	2	2	Smith & Moore's Cases.
Equity and Equity Pleading	1½	1½	Hutchins & Bunker's Cases on Equity. Lube on Equity Pleading.
Real Property		4	Finch's Cases.
Bailments and Carriers	2	2	Goddard's Cases.
Moot Court	1	1	
Constitutional Law	2	2	McClain's Cases.
Conflict of Laws	1	1	Lorenzen's Cases.
Private Reading Course	½	½	
Debating	1	1	
	14	16	

LAW COURSES

To Be Given in 1914-15 and Alternate Years.

Evidence	Wigmore's Cases.
Persons	Woodruff's Cases.
Private Corporations	Warren's Cases.
Damages	Russell's Cases.
Wills and Administration	Costigan's Cases.

COURSES OF READING IN LEGAL HISTORY, LEGAL BIOGRAPHY AND GENERAL LEGAL LITERATURE.

It is the design of these reading courses to give the law student an acquaintance with the best traditions of the legal profession and to fire him with ambition to emulate its great men; secondly, to accustom him to serious work without the daily stimulus of a teacher's daily supervision. Hence the student is recommended not to confine himself to the minimum here prescribed, but to read even more widely on similar lines.

RULES FOR THE COURSES.

1. Students are urged to do the required reading during the summer vacation.

2. An examination will be held in all the courses at the beginning of the first term of the year, and at the end of each semester.

3. On passing the examination a credit of one hour for one semester will be given. A passing grade must be reached in order to graduate.

4. Students are recommended to own the books named if they can afford to buy them, but the Library will afford a sufficient number of copies.

THE COURSES.

First Year.

Wambaugh's Study of Cases, Part 1; Blackstone's Commentaries, Introduction sections 1, 2 and 3; selected chapters from Books III and IV. The Lives of Chief Justice Marshall and Taney and of Judge Story.

Second Year.

Reed's Conduct of a Lawsuit; Harris's Hints on Advocacy; selected lives from Campbell's Lives of the Chief Justices; selected orations of British and American Lawyers; Blackstone's Commentaries; selected chapters from Books I and II.

Third Year.

Abbott's Brief-Making; Davis on International Law; Archer's Ethical Obligations of a Lawyer; Howe's Studies in the Civil Law.

THE SCHOOL OF PEDAGOGY

The growing demand for young men in the teaching profession, in which male teachers are comparatively few, is being met by the Colleges and Universities of the United States in various ways.

The University of Santa Clara has not neglected to do her part in this work, though for the most part her graduates who have entered the teaching profession have found congenial employment in the Preparatory or High School of the University. With the growth of the teaching profession and the increased demand for the male teachers and the increased salaries offered teachers, it is but natural that in the coming years an ever increasing number of young men will elect to follow this noble calling which possesses such a fascination for men who have the gifts requisite for such work.

The University offers the following special courses in pedagogy. The student will find in them in due proportion the history, theory and practice of education. The practical work in education is conducted in the Preparatory Department of the University, under the direction of experienced teachers.

Course 1. History of Education.

Three Hours, One Semester.

A historical treatment of the various systems of education in ancient, medieval and modern times.

Course 2. Systems of Education.

Two Hours, One Semester

A study of the principal systems of education. The

THE DEGREE OF

BACHELOR OF ARTS

WAS CONFERRED ON

John Philip Barnard
Richard Vincent Bressani
Constantine Mlchael Castruccio
Harry Seymour Curry (Cum Laude)
Eugene Paul Fitzgerald
Robert Justin Flood
Demetrio Harkins (Cum Laude)
George Blake Lyle
Walter James Lyng
Harry William McGowan
Oliver George Nino
Percy Claude O'Connor
Bradley Vernum Sargent, Jr.
Stephen Mallory White

THE DEGREE OF

BACHELOR OF SCIENCE

WAS CONFERRED ON

Joseph Puzey Lindley
Albert Joseph Newlin
Jose Francisco Salazar

EXTRAORDINARY PRIZES

Senior Nobili. An annual prize of $60.00 founded by Joseph A. Donohoe, Esq., in honor of the First President of Santa Clara, Fr. John Nobili, S. J., to be given to the student who shall be deemed first in morals, obedience and application to study, is awarded to Louis Thomas Milburn. Deserving special mention: James Fitzpatrick, Joseph Christy, James Coyle, Robert Flood, Joseph Herlihy, George Lyle, Harold McKinnon, Michael Leonard, Chris Momson, Thomas Plant, Joseph Thomas, David Draper, George Nicholson, Miles Fitzgerald, Rodney A. Yoell, Oliver Nino.

Junior Nobili. An annual prize of $35.00 founded by Michael H. Kelly, Esq., to be given to the student in the High School Department who shall be deemed first in morals, obedience and application, is this year awarded to Thomas Francis Kearns. Deserving special mention: Mark Falvey, Richard Noonan, Edward Haskamp, Thomas Davis, James Lyons, Leo Lucas, Joseph Aurrecoechea, Jose Viosca, John Corrado Puccinelli, Kevin Casey, William Daley, Elisha Dana, Herman Dieringer, Richard Eisert, Arthur Falvey, Archibold Fraser, Thomas Conneally, Francis Conneally, Thomas Sparks, William Irwin, Rea Harter, Louis Blinn, Norbert Korte, Edward Kearns, William Scott, Errol Quill.

The Archbishop's Medal. An annual prize of $50.00, the gift of His Grace William Patrick Riordan, Archbishop of San Francisco, for the student who shall have competed most successfully in an examination in Christian Doctrine, is this year awarded to William Allen Irwin. Distinguished, George A. Nicholson, Frank McCune, James Donovan.

The Donohoe Prize. An annual prize of $50.00, to be awarded to the student who shall show the greatest progress in the study of Latin and Greek during the session, has this year been set aside for the best Latin Composition and divided into three purses of $25.00, $15.00 and $10.00 respectively. The first purse is this year awarded to Joseph Armand Robidoux. The second purse to Arthur Valentine Samaniego. The third purse to Philip Patrick Martin. Distinguished, John Joseph Forde, George Peter Somps.

The Ryland Medal. An annual prize of $25.00, the gift of Hon. C. T. Ryland of San Jose, to be given to the student who may be deemed by the University most fit for the prize, has been set aside for the student who shall be judged to have distinguished himself most in the Annual Ryland Debate, and is this year awarded to Royal Andrews Bronson. To the above has been added in late years two purses, the gift of John W. Ryland, which are given for those next in merit in the Ryland Debate. One purse is awarded to Harry McGowan; the other to Harold McKinnon. Deserving special mention, Rodney A. Yoell, E. G. White, Frank Boone.

The Barchi Prize. An annual prize of $25.00 for the best paper on some scientific subject, as shall be determined by the Faculty, is divided into two purses of $15.00 and $10.00 respectively. The first purse is awarded to James Francis Donovan. The second purse to James D. Coyle. Distinguished, Harry S. Curry, Howard E. Crane, John B. Winston, William N. Mullen.

The McCann Prize. An annual purse of $25.00, founded in honor of Daniel B. McCann, B. S., '84, to be given for the best short story, is this year awarded to Gerald McElroy. Distinguished, Frank Schilling and J. Charles Murphy.

LIST OF STUDENTS

Ahern, John Francis	Freshman
Artana, Francis George	Freshman
Baiocchi, Adolph John	Junior
Bale, John Edward	Sophomore
Balfour, Francis Clyde	Freshman
Barnard, John Philip	Senior
Benneson, Harris Alfred	Freshman
Best, Ervin Samuel	Junior Law
Bettens, Thomas Ricks	Freshman
Bonnetti, Clement Albert	Sophomore
Boone, Frank Griffin	Junior
Booth, Edwin Sebastian	Sophomore
Bressani, Richard Valentine	Senior
Bronson, Royal Andrews	Junior Law
Browne, Francis Emmett	Freshman
Canelo, Adolph Briones	Sophomore
Cannon, William Stewart	Freshman
Campbell, Paul Colin	Freshman
Carlin, Edwin William	Junior
Caspers, Rudolph William	Sophomore
Castruccio, Constantine M.	Senior
Cleghorn, Hial Joseph	Sophomore
Chargin, Joseph Anthony	Freshman
Christy, William Joseph	Freshman
Concannon, John Martin	Junior
Concannon, Thomas	Freshman
Crane, Howard Edward	Special
Coschina, Emil Orpheus	Law Special

Costel, Constantine G.	Freshman
Coyle, James David	Freshman
Curry, Harry Seymour	Senior
Davies, Donald Samuel	Freshman
Degnan, John Paul	Special
Di Fiore, Carlo Frederick	Sophomore
Donovan, James Francis	Freshman
Donovan, William A.	Freshman
Dougherty, Francis Xavier	Freshman
Draper, David Burris	Freshman
Emerson, Roy Paul	Freshman
Fernsworth, Lawrence	Sophomore
Fitzgerald, Eugene Paul	Senior
Fitzgerald, Miles Aloysius	Freshman
Fitzpatrick, William Benjamin	Freshman
Fitzpatrick, James Peter	Sophomore
Fitzpatrick, Keene Leo	Sophomore
Flood, Robert Justin	Senior
Ford, Thomas Joseph	Sophomore
Forde, John Joseph	Sophomore
Hardy, Bert Mallot	Junior
Harkins, Demetrio	Senior
Herlihy, James Joseph	Freshman
Herrin, William Van Cleef	Freshman
Hewitt, Benjamin Roller	Junior
Holmes, William Ray	Freshman
Hogan, Robert Michael	Junior
Jennings, Louis Peter	Freshman
Jones, John	Junior
Kavanagh, Alfred Louis	Freshman

Keenan, Joseph Emmett	Freshman
Kiely, Michael Anthony	Sophomore
Laine, Franck	Freshman
Lettunich, Nicholas Matteo	Freshman
Leonard, Michael James	Freshman
Lyle, George Blake	Senior
Lyng, Walter James	Senior
Lynn, George Ignatius	Special
Macaulay, Thaddeus Warsaw	Sophomore
Martin, Nicholas Joseph	Freshman
Martin, Philip Patrick	Sophomore
Matson, Francis George	Freshman
McCarthy, Emmett Daniel	Sophomore
McDonough, Patrick William	Special
McGowan, Harry William	Senior
McKinnon, Harold Richard	Junior
McLaughlin, Edward Henry	Freshman
Melchior, Michael Joseph	Junior
Milburn, Louis Thomas	Sophomore
Momson, Chris Martin	Sophomore
Mullen, William Nelson	Freshman
Nicholson, George Aloysius	Freshman
Nino, Oliver George	Senior
O'Hare, James Michael	Freshman
Oliver, Ignatius Alvin	Freshman
O'Neil, Ignatius Patrick	Freshman
O'Connor, Edward Nicholas	Sophomore
O'Connor, Percy Claude	Senior
Pacheco, Benjamin Lugardo	Freshman
Parker, Howard Russell	Junior
Parker, Joseph Raymond	Freshman

Plant, Thomas Raynor	Sophomore
Putnam, Crayton Hayes	Freshman
Ragan, George Anthony	Freshman
Ramage, James Artison	Sophomore
Ramos, Rinaldo William	Freshman
Rhodes, Augustus Loring	Freshman
Riordan, Thomas Joseph	Law Junior
Rosenthal, Errol Vernon	Freshman
Ryan, James Francis	Senior
Ryan, Robert Emmett	Sophomore
Sargent, Bradley Vernum	Senior
Salazar, Jose Francis	Junior
Sheehy, John Frederick	Sophomore
Shipsey, William Thomas	Sophomore
South, Charles Daniel	Freshman
Speciale, Orvis Humphrey	Freshman
Stanfield, John Harold	Freshman
Stewart, Archibald P.	Sophomore
Thomas, Joseph Leo	Senior
Trabucco, Eugene Joseph	Freshman
Tramutola, Chauncy	Junior Law
Van Leeuwen, Earl G.	Sophomore
Voigt, Guy	Sophomore
Waite, Elon J.	Freshman
Walsh, Edwin Martin	Freshman
Wentz, Henry Edward	Freshman
Whelan, Harry Gabriel	Freshman
White, Edward Gerald	Junior Law
White, Stephen Mallory	Senior
Winston, John Bandini	Freshman
Worden, Waldo S.	Special

Ybarrondo, Thomas B.	Junior
Yoell, Rodney Gregory	Junior
Zarick, Marco Samuel	Junior Law

PREPARATORY DEPARTMENT

Allen, John Earnest	Third Year
Alvarez, Jose Augustus	Special
Alvarez, Luis Philip	Special
Amarel, Edward Alexander	Second Year
Antonioli, Casimer Andrews	First Year
Appel, Hilary Horace	Second Year
Arbios, Sodie Philip	First Year
Askam, Oliver Perry	Fourth Year
Aurrecoechea, Jose Ramon	Fourth Year
Baker, Francis Edward	Second Year
Baldisini, Constantine	First Year
Barron, William Stanton	Fourth Year
Bartley, William Alexander	Third Year
Barzen, Howard Francis	Second Year
Bean, Edwin James	Third Year
Beatty, John William	First Year
Bell, Vernon Joseph	Third Year
Bello, David	First Year
Berger, Earle Osborn	Fourth Year
Bergez, Louis John	Second Year
Bessolo, John Angelo	Fourth Year
Blake, Arthur Francis	Third Year
Blinn, Louis William	Second Year
Brewer, Arthur H.	Third Year
Buhr, Walter Joseph	Third Year

Burns, Walter Irvin	Second Year
Butler, Harry Joseph	Special
Butt, Joseph Chirardelli	First Year
Cabral, Joseph	Second Year
Callahan, Raymond Walter	Second Year
Camarillo, Frank Adolph	Second Year
Cardenas, Philipe de Jesus	Third Year
Carson, Lloyd Walter	Fourth Year
Casey, Thomas Francis	Second Year
Casey, Harry Francis	First Year
Casey, William Kevin	First Year
Clarke, James Edward	Third Year
Clemens, Thomas Brackenridge	Third Year
Cordon, Herbert Francis	First Year
Conneally, Francis Michael	First Year
Conneally, Thomas Joseph	First Year
Cunningham, Hugh Peter	Second Year
Collins, Charles Wilbur	Second Year
Cullen, John Patrick	Second Year
Crummey, Raymond Hugh	Special
Curley, William A.	First Year
Crooks, Raymond Ralph	First Year
Crosetti, John Charles	First Year
Dailey, William Kenneth	First Year
Dana, Elisha Colt	First Year
Davis, Thomas Hart	Third Year
Derry, Frank Joseph	Third Year
Detels, William Joseph	First Year
Diaz, Dimetrio	Second Year
Dierenger, Herman Charles	First Year
Di Fiore, Dominic Frank	First Year
Di Fiore, Pasqualino Leopold	Second Year

Dodge, Claude Peter	Second Year
Dolan, Francis Joseph	First Year
Dominguez, Arnulfo M.	Special
Doran, William Patrick	First Year
Doud, Francis Harry	First Year
Doyle, George Gregory	Second Year
Drees, Charles John	Third Year
Driscoll, Edward Charles	First Year

Eisert, Richard Joseph	First Year
Eisert, Joseph Francis	First Year
Erigero, Anthony Bernard	Fourth Year

Falvey, Arthur A.	Second Year
Falvey, Mark Anthony	Second Year
Ferrario, Edward Joseph	Fourth Year
Flannery, Harold James	First Year
Flood, Edward Ruben	Fourth Year
Ford, T.	First Year
Frazer, Archibald Wilson	First Year
Freitas, Joseph Romasco	First Year

Gaffey, Tracy William	Second Year
Geoghegan, Rudolph Francis	Second Year
Geoghegan, John Charles	Second Year
Green, John William	Second Year
Green, George Joseph	Second Year
Glau, John Raymond	Fourth Year
Ginocchio, Benard Andrew	Fourth Year
Gilmore, Charles Glendon	First Year
Gilman, Daniel Arthur	Third Year
Gianella, William Augustus	First Year
Geha, William Joseph	First Year
Geha, Nicholas Isaias	Second Year

Gavigan, John Daniel	Second Year
Garlipp, Frederick James	First Year
Howard, James Leo	Second Year
Holthouse, Eberhard Leo	First Year
Holthouse, Basil Herman	First Year
Hill, Albert Daniel	Third Year
Herman, Carlton William	First Year
Henderson, Joseph Walffing	Second Year
Hemmerick, Carl Frederick	Fourth Year
Heeninger, George Edward	Fourth Year
Harwood, Howard Albert	Second Year
Harter, Edwin Rea	Third Year
Harkins, Henry Augustus	Fourth Year
Haskamp, Edward Bernard	Third Year
Hallinan, Jerome Anthony	First Year
Irwin, William Allen	First Year
Joyce, Philip Joseph	First Year
James, Elmo Michael	Third Year
Jacobs, Joseph Theodore	First Year
Jackson, Walter Sullivan	Fourth Year
Jackson, Harry Dalton	Second Year
Kanthlener, Paul Leroy	First Year
Kavanagh, Cecil Robert	First Year
Kearns, Edward Judge	Third Year
Kearns, Thomas Francis	Second Year
Keefe, Harold Edward	Third Year
Keesling, Stafford	Fourth Year
Keller, Donald Henry	First Year
Keller, Charles Joseph	First Year
Kelley, Harold William	Fourth Year

Kelley, Raymond Charles	First Year
Koch, Edwin Augustus	Third Year
Korte, Norbert	Second Year
Kreig, John Martin	First Year
Landregan, William Earl	Fourth Year
Lamkin, Lester William	Second Year
Larrouy, Emile Pasteur	Fourth Year
Le Four, Frank Montecora	Special
Lievano, Joseph Anthony	First Year
Leigh, George McBain	Second Year
Leininger, Victor Joseph	Third Year
Lewis, William Leo	Third Year
Lindley, Iza Rhoderick	Third Year
Lorigan, Harry Kirk	Fourth Year
Lorigan, Raymond William	First Year
Loupe, James Rea	Third Year
Lucas, Leo John	Second Year
Ludwig, Robert Emerson	Fourth Year
Lyons, James Joseph	Third Year
Maggetti, Horace Wall	First Year
Marelia, Hubert C.	Second Year
Martin, Howard George	First Year
Martin, Ralph Henry	Fourth Year
Mayrle, Raymond Joseph	Second Year
McCabe, Francis Arlington	Fourth Year
McCann, William Joseph	First Year
McCarthy, Anthony Stanislaus	Second Year
McCarthy, Neal	Third Year
McElroy, Ransome Gerald	Second Year
McGurrin, Frank Buckley	First Year
McKnight, Edwin Joseph	Third Year
Maderas, Alfred	Second Year

Marinovich, Peter Blas	Third Year
Mitchell, Joseph Harold	Second Year
Murphy, Charles John	Third Year
Nash, Samuel Edwin	First Year
Nicholson, Edward Lorigan	Third Year
Niemeyer, Bernard Emmet	First Year
Nino, Edward Eugene	Fourth Year
Noonan, Joseph Aloysius	Fourth Year
Noonan, Richard Ignatius	Fourth Year
Nunes, John	First Year
O'Brien, Elmer Bertrand	Second Year
O'Connor, Lester Carl	Third Year
O'Connor, Thomas Ambrose	Fourth Year
Olivares, Julio	First Year
O'Neil, Edward Alexander	Third Year
O'Neil, Ira Francis	Second Year
O'Neil, John Thomas	Second Year
Pancera, George Augustus	Second Year
Parra, Blas	Fourth Year
Parra, Victor George	Second Year
Porta, Raphael Anthony	First Year
Puccinelli, Corrado John	First Year
Quill, Errol Vincent	Fourth Year
Robasciotti, Julius Andrew	Third Year
Robidoux, Joseph Armand	First Year
Roche, John Thomas	First Year
Riordan, Harold Joseph	Second Year
Rosenthal, Marshal Benson	First Year
Ryan, Daniel James	Third Year

Samaniego, Arthur Valentine	First Year
Sanborn, William Edward	Second Year
Shilling, Frank Walter	Second Year
Schino, Ernest Michael	Second Year
Schirle, Emile Anthony	First Year
Schnereger, Erle Joseph	Third Year
Schupp, Charles Edward	Third Year
Schween, Ernest William	Third Year
Scott, William Winder	Third Year
Selaya, Manuel Julian	Second Year
Sheehy, Gerald Francis	Third Year
Sheehan, William Joseph	First Year
Semino, Joseph	Second Year
Simmermacher, Elmer R.	Special
Somps, George Peter	Second Year
Snook, Lloyd	Third Year
Salazar, Robert Quizada	Fourth Year
Sparks, Thomas Albert	First Year
Sportono, Emile William	First Year
Stamp, John Joseph	Second Year
Steiger, Louis Adolph	Second Year
Stephenson, James Fillmore	First Year
Sternes, George Duncan	Second Year
Stephens, Lawrence Provis	First Year
Sullivan, William Ward	First Year
Suttich, John William	Second Year
Sweezy, Claude Bernard	Fourth Year

Taforo, Leo Joseph	First Year
Taminelli, Thomas Lester	Second Year
Tarantino, Vincent	First Year
Tarrazas, Abel Joseph	Special
Terreros, Vincent Romero	First Year

Traynham, Donald Palmer	Third Year
Truett, Harry	First Year
Tuttel, Daniel Vincent	First Year
Trabucco, John Emile	Third Year
Vatuone, Fortunato Romeo	Second Year
Vejar, Rudolph Gass	Second Year
Viosca, Joseph Eugene	First Year
Volkers, Keith William	Second Year
Van Raesfeld, Goswin	Second Year
White, Benjamin Alvin	Second Year
White, William Henry	First Year
Wideman, Honore Alfred	First Year
Williams, Roy John	First Year
Winston, James Wallace	Third Year
Wollenslager, John Adam	Third Year
Ybarrondo, Raymond	First Year
Zaput, Pedro Manuel	Fourth Year
Zavalza, Jose Moye	First Year

PREPARATORY DEPARTMENT

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
Subject	Hrs.	Subject	Hrs.	Subject	Hrs.	Subject	Hrs.
Latin	8	Latin	8	Latin	8	Latin	4
English	6	English	6	English	6	English	4
Religion	2	Religion	2	Religion	2	Religion	2
Mathematics	5	Mathematics	5	Mathematics	5	Mathematics	5
History	5	History	5	History	5	Greek	5
				Greek	5	History	5
						*Physics	7

*Physics is required of students preparing to enter the department of engineering, architecture and the college of general science.

Commercial branches (ten hours) may by special arrangement be taken after the first year of the preparatory school. This is not, however, recommended in the case of students who intend to enter University courses.

Modern Languages (three hours) may be elected during the last two years of the preparatory course.

Written Work

Home-Tasks, Examinations.

Daily home-tasks are required in Latin, Greek and Mathematics, and two home-tasks weekly in English.

Written examinations in all branches studied are held every month.

COMMERCIAL CERTIFICATES

WERE AWARDED TO

James Michael O'Hare
Harold Edward Keefe
Frank Joseph Derry

PREPARATORY DEPARTMENT

First Year

Course 1. Latin.

Eight Hours, One Semester.

Precepts: Etymology and Syntax. Text: Pearson, Essentials of Latin. Authors: Caesar, Selections. Practice: Themes.

Course 2. Latin.

Eight Hours, One Semester.

Precepts: Etymology and Syntax. Text: Pearson, Essentials of Latin. Authors: Caesar, Gallic War. Practice: Themes in imitation.

Course 3. English.

Six Hours, One Semester.

Precepts: Brooks, English Composition, pp. 1-69 and Chapter 12. Authors: Irving, Sketch Book. Lamb, Tales from Shakespeare. Practice: Weekly Compositions.

Course 4. English.

Six Hours, One Semester.

Precepts: Brooks, English Composition, pp. 69-100. Authors: Macaulay, Lays of Ancient Rome. Scott, Ivanhoe. Practice: Weekly Composition.

Course 5. Religion.

Two Hours, One Semester.

Christian Doctrine. Baltimore Catechism thoroughly reviewed.

Course 6. Religion.

Two Hours, One Semester.

Kinkead. Explanation of the Baltimore Catechism.

Course 7. Mathematics.

Five Hours, One Semester.

Algebra. Text: Wells Algebra, from beginning to factors inclusive.

Course 8. Mathematics.

Five Hours, One Semester.

Algebra: Text: Wells Algebra, from factors to quadratics inclusive.

Course 9. History.

Five Hours, One Semester.

The Ancient Nations and Greece. Text: Goodspeed.

Course 10. History.

Five Hours, One Semester.

Rome. Text: Goodspeed.

Second Year.

Course 11. Latin.

Eight Hours, One Semester.

Precepts: Etymology and Syntax reviewed in analysis work. Authors: Caesar, Gallic War, two Books. Practice: Themes in Imitation.

Course 12. Latin.

Eight Hours, One Semester.

Precepts: Syntax reviewed in analysis work concluded. Themes in Imitation.

Course 13. English.

Six Hours, One Semester.

Precepts: Brooks, English Composition, pp. 110-178. Authors: Scott, Lady of the Lake. DeQuincey, Joan of Arc. Byron, Prison of Chillon and Selections. Practice Composition. Exercises.

Course 14. English.

Six Hours, One Semester.

Precepts: Brooks, English Composition, pp. 178-237. Authors: Addison and Steele, Sir Roger de Coverley Papers. Shakespeare, Julius Caesar. Practice: Composition. Exercises.

Course 15. Religion.

Two Hours, One Semester.

Christian Doctrine. Text: Kinkead, Explanation of the Baltimore Catechism, second half.

Course 16. Religion.

Two Hours, One Semester.

Christian Doctrine. Text: De Harbe, Full Catechism of the Christian Religion, Part II.

Course 17. Mathematics.

Five Hours, One Semester.

Algebra to Quadratics reviewed. Text: Wells, Algebra.

Course 18. Mathematics.

Five Hours, One Semester.

Algebra from Quadratics to end. Text: Wells, Algebra.

Course 19. History.

Five Hours, One Semester.

Medieval and Modern.

Course 20. History.

Five Hours, One Semester.

Modern History.

Third Year

Course 21. Latin.

Eight Hours, One Semester.

Precepts: Syntax. Authors, Cicero, De Amicitia and Letters. Practice: Themes in Imitation.

Course 22. Latin.

Eight Hours, One Semester.

Precepts: Syntax. Authors: Cicero, Narrations and Descriptions. Ovid, Narrations and Descriptions. Practice: Themes in Imitation. Original Exercises.

Course 23. English.

Six Hours, One Semester.

Precepts: Text: Brooks, English Composition, Book II. Authors: Hawthorne, House of the Seven Gables. Byron, Prisoner of Chillon. Practice: Composition, Written Exercises.

Course 24. English.

Six Hours, One Semester.

Exercises. Second Term. Precepts. Text: Brooks, English Composition, Book II. Authors: Newman, Callista, Shakespeare, Merchant of Venice. Practice: Composition, Written Exercises.

Course 25. Religion.

Two Hours, One Semester.

Christian Doctrine. Text: Deharbe, Full Catechism of Christian Religion, Part III.

Course 26. Religion.

Two Hours, One Semester.

Christian Doctrine. Text: Deharbe, Full Catechism of Christian Religion, Part I.

Course 27 Mathematics.

Five Hours, One Semester.

First Term. Plane Geometry. Algebraic Applications. Text: Wentworth.

Course 28. Mathematics.

Five Hours, One Semester.

Second Term. Plane Geometry. Algebraic Applications. Text: Wentworth.

Course 29. History.

Five Hours, One Semester.

Civil Government. Text: Strong, Government of the American People.

Course 30. History.

Five Hours, One Semester.

History of the United States. Text: Montgomery, Students' American History.

Fourth Year

Course 31. Latin.

Five Hours, One Semester.

Precepts Syntax. Authors: Cicero, De Senectute. Virgil, Three Books. Practice, Themes in Imitation. Original Exercises. Easy Latin Conversation.

Course 32. Latin.

Five Hours, One Semester.

Precepts: Prosody. Authors: Cicero, Narrations.

Virgil, Three Books. Practice: Themes in Imitation. Original Exercises. Easy Latin Conversation.

Course 33. English.

Four Hours, One Semester.

Precepts: First Steps in English Rhetoric. Text: Essentials of English Composition—Linn. Authors: Macaulay, Johnson, Shakespeare, Macbeth. Practice Composition. Exercises in simpler forms of verse.

Course 34. English.

Four Hours, One Semester.

Precepts: English Rhetoric. Text: Essentials of English Composition—Linn. Authors: Poe, Tales, Selections in verse. Practice: Composition. Exercises in simpler forms of verse.

Course 35. Religion.

Two Hours, One Semester.

Christian Doctrine. Text: Faith of Our Fathers, first half.

Course 36. Religion.

Two Hours, One Semester.

Christian Doctrine. Text: Faith of Our Fathers, second half.

Course 37. Mathematics.

Five Hours, One Semester.

Solid Geometry. Text: Wentworth, Plane and Solid Geometry.

Course 38. Mathematics.

Five Hours, One Semester.

Plane Trigonometry. Wentworth.

Course 39. History.

Five Hours, One Semester.

History of England, Birt's Lingard.

Course 40. History II.

Five Hours, One Semester.

History of England, Birt's Lingard.

Course 41. Physics.

Eight Hours, One Semester.

A course in elementary Physics, with copious laboratory experiments.

Course 42. Physics.

Eight Hours, One Semester.

A continuation and completion of Elementary Physics.

Course 43. Greek.

Precepts: Syntax. Text: Yenni, Greek Grammar. Authors: Xenophon, Anabasis, two Books.

Course 44. Greek.

Precepts: Syntax, Etymology, etc. Text: Yenni, Greek Grammar. Authors: Lucian, Dialogues. Anacreon, Odes. Practice: Themes in Imitation. Exercises in easy conversation based on the Author.

DONATIONS AND BENEFACTIONS

An Alumnus	$20,000 00
A Friend	2,500 00
Mr. John W. Ryland (for Law)	1,000 00
Mr. John W. Ryland (for the Observatory)	700 00
Miss Mary McCann	1,200 00
Miss Ella Madden	1,200 00
Dr. Frederick C. Gerlach	1,000 00
Minor Donations	2,500 00
	$30,100 00
Jesse W. Bryan, to foundation of Perpetual Scholarship	$12,500 00
	$42,600 00

Mr. Sex, contribution to Law Library.